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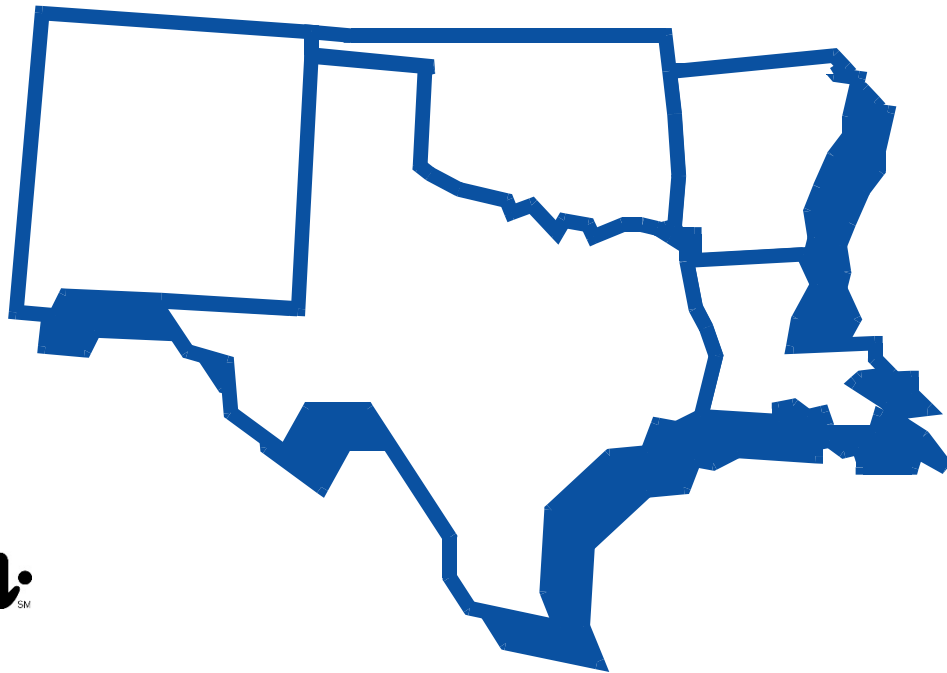


Remedial Investigation Data Gap Summary Report
Version 1.1

Tar Creek Superfund Site Operable Unit 5
Ottawa County, Oklahoma

Task Order No. 0079-RICO-06TS
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November 2017



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Tar Creek Superfund Site Operable Unit 5

Remedial Investigation Data Gap Summary Report Version 1.1 DCN: 0079-02002

Prepared for

U.S. Environmental Protection Agency Region 6

November 2017



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Document Version Log

Data Gap Summary Report

Tar Creek Superfund Site Operable Unit 5 Remedial Investigation

Ottawa County, Oklahoma

Date	Description
December 2016	This Version 1.0 of the Data Gap Report has been prepared for EPA Region 6 for release to project stakeholders for review.
November 2017	This Version 1.1 of the Data Gap Report has been prepared to address comments received on Version 1.0, in accordance with the response to comments prepared and dated April 18, 2017. A copy of the responses to comments is included in Appendix C of this document.

Note: As each new version is published, a description of the changes made will be included on this table.

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Acknowledgments

EPA Region 6 and CH2M would like to express their appreciation to a number of organizations and individuals who contributed to the significant efforts of collecting existing site information and data that supported this project. In particular, we would like to thank each Native American Tribe that helped us with this effort, including:

- Quapaw Tribe of Oklahoma
- Peoria Tribe of Indians of Oklahoma
- Miami Nation of Oklahoma
- Ottawa Tribe of Oklahoma
- Eastern Shawnee Tribe of Oklahoma
- Wyandotte Nation of Oklahoma
- Cherokee Nation
- Modoc Tribe of Oklahoma
- Seneca-Cayuga Tribe of Oklahoma
- Eastern Shawnee Tribe of Oklahoma

We would also like to thank the following federal, state, local and other contributing stakeholders:

- EPA Region 7
- The State of Oklahoma
- The State of Kansas
- The State of Missouri
- United States Geological Survey
- United States Fish and Wildlife Service
- Bureau of Indian Affairs
- Local Environmental Action Demanded Agency
- Dr. Robert Nairn, University of Oklahoma
- Dr. F.E. Kirschner, LPG, LPHG, AESE, Inc.

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Executive Summary

The Tar Creek Superfund Site, Operable Unit (OU) 5, is defined by the United States Environmental Protection Agency (EPA) Region 6 as sediments and surface water in perennially flowing creeks, streams, and rivers within the Oklahoma portion of the Tri-State Mining District (TSMD) that may be impacted by historical mining activities. The definition of OU5 has been further defined by EPA Regions 6 and 7 and site stakeholders such as Native American Tribes in the area to include the following seven specific watersheds that flow downstream from EPA Region 7 states (Kansas and Missouri) into EPA Region 6 (Oklahoma):

- Fourmile Creek (an upstream background or reference location unaffected by historical mining activities)
- Elm Creek
- Tar Creek (including Lytle Creek)
- Neosho River
- Beaver Creek
- Lost Creek
- Lower Spring River (portion of Spring River downstream of Empire Lake in Kansas, and ending at the headwaters of Grand Lake O' the Cherokees)

Combined, the above watersheds comprise the overall study area and constitute the area addressed by the conceptual exposure model for the site.

The EPA has determined that surface water, sediment and aquatic biota data associated with OU5 should be evaluated for the presence and concentration of site-related contaminants to assess whether potential human health risk exists from exposure to these media.

As the first step in this process, EPA has requested a review of the available data and potential data gaps to determine whether collection of additional surface water, sediment or aquatic biota data is necessary to complete this assessment. This review will form the basis for additional data collection as needed and support completion of a remedial investigation (RI) and human health risk assessment (HHRA) for OU5.

This report identifies, compiles, organizes, analyzes, and presents a summary of all known and readily available data relevant to the OU5 RI/HHRA, and identifies additional data collection efforts necessary for completion of the RI/HHRA.

The nature and extent of contamination associated with the former mining, milling, and smelting operations conducted in the TSMD have been investigated extensively. These previous investigations have evaluated the physical and chemical characteristics of mine and mill residues and smelter wastes deposited on the surface in the TSMD; the transport of metals from these residues; and the concentration of metals in air, surface water, groundwater, sediments, soils, plants, wildlife, and other resources in the vicinity of former mining operations in the TSMD. These existing data were evaluated with respect to OU5 RI and HHRA data needs.

The tasks conducted for the report included:

- Compiling literature resources and data collected in the TSMD related to sediment, surface water, aquatic biota, and human health exposures to characterize the extent of contamination and potential risks to human health;

- Compiling and summarizing existing data, identifying significant data gaps, and proposing additional data collection to address significant gaps as necessary to support preparation of the RI and HHRA;
- Preparing a data gap summary report (this document)

Based upon completion of the above tasks, the following points summarize the findings of the data gap assessment:

Sediments – Data gaps exist for sediments for use in the HHRA evaluation in Fourmile Creek, Elm Creek, and Lost Creek. The available sediment data is sufficient for nature and extent characterization but will be supplemented with the new data collected to address the HHRA data gap.

Surface Water – Neither a HHRA or nature and extent data gap for surface water exists; the available data is sufficient. While sufficient, this data set will be supplemented with new surface water samples that will be collected as co-located samples during efforts to address biota data gaps.

Mine Discharge – Of the three mine discharge areas, HHRA and nature and extent data gaps exist only for the Tar Creek discharge area within the Tar Creek watershed. Mine discharge data is sufficient for HHRA and determination of nature and extent for the Commerce area discharge (in the Tar Creek watershed) and the Beaver Creek discharge area (in the Beaver Creek watershed).

Fish - Data gaps exist for both game and non-game fish in all watersheds.

Shellfish – A data gap exists for shellfish (mussels/Asian clams) in all watersheds.

Waterfowl – Waterfowl (ducks) are to be addressed qualitatively using historical work completed at the Couer d' Alene site. As such, a data gap does not exist under this current approach to evaluating waterfowl.

Aquatic Plants – A data gap exists for aquatic plants in all watersheds; duckweed and arrowhead root will be sampled as representative species.

Aquatic Amphibians – A data gap exists for aquatic amphibians in all watersheds; bullfrogs will be sampled as a representative species.

Semi-Aquatic Mammals – A data gap exists for semi-aquatic mammals in all watersheds; raccoons will be sampled as a representative species.

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Acronyms and Abbreviations

µg/dL	microgram per deciliter
°F	degree Fahrenheit
AATA	AATA International, Inc.
amsl	above mean sea level
AMW	acid mine water
bgs	below ground surface
CDC	Centers for Disease Control
CEM	conceptual exposure model
CFR	<i>Code of Federal Regulations</i>
cfs	cubic foot per second
CSM	conceptual site model
CY	cubic yard
DQO	data quality objective
EPA	U. S. Environmental Protection Agency
FS	Feasibility study
FSP	field sampling plan
gpm	gallon per minute
HAA	high-access areas
HHRA	human health risk assessment
MESL	MacDonald Environmental Sciences, Ltd.
mgd	million gallons per day
NRCS	Natural Resources Conservation Service
ODEQ	Oklahoma Department of Environmental Quality
ODWC	Oklahoma Department of Wildlife Conservation
OWRB	Oklahoma Water Resources Board
OU	Operable Unit
QAPP	quality assurance project plan
RI	remedial investigation
ROD	Record of Decision
RSL	regional screening level
SLERA	screening-level ecological risk assessment
SOW	statement of work
TEMS	Tribal Environmental Management Services
TSMD	Tri-State Mining District
TSV	toxicity screening values
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey

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Introduction

This document is the Data Gap Summary Report for Operable Unit (OU) 5 at the Tar Creek Superfund Site (site) in Ottawa County, Oklahoma (Figure 1-1). The site is part of the larger Tri State Mining District (TSMD) that consists of historical lead and zinc mining areas in northeast Oklahoma, southeast Kansas, and southwest Missouri. This report was prepared by CH2M under contract EP-W-06-021, with the United States Environmental Protection Agency (EPA) Region 6, Task Order 079. This report identifies, compiles, organizes, analyzes and presents a summary of all known and readily available data that are relevant to the scope of the OU5 remedial investigation (RI) and human health risk assessment (HHRA). The results of the report will be used to guide future data collection efforts required to address data gaps for the completion of the RI.

1.1 Project Scope

The project scope as defined below is a cooperative effort involving the sharing of information, resources, and data between EPA Regions 6 and 7, Native American Tribes with an interest in the site, the States of Oklahoma, Missouri and Kansas, and other federal and local stakeholders. EPA's statement of work (SOW), dated March 26, 2015, stated the following primary scope objectives:

- Conduct a RI for OU5.
- Identify and compile literature resources and data collected in the TSMD related to sediment, surface water, and human health exposure to characterize the extent of contamination and risks to human health and the environment.
- For the RI, include the investigation and study of sediment, surface water and human health exposure related to sediment, surface water and aquatic biota.
- Compile and summarize existing data, identify any data gaps, and collect new data as necessary to support completion of the RI and HHRA.
- Prepare a data gap summary report (this document), a RI characterization report, and a HHRA report.

The scope for OU5 will also include assessment of direct mine discharge to surface water in the Oklahoma portion of the study. Sediments and surface water, as defined under OU5, are found in the wet or saturated areas of the stream banks of perennially flowing streams, creeks, and rivers within the study area (see Section 1.2 below).

The scope of OU5 ends at the downstream confluence of Neosho and Spring Rivers at the Twin Bridges area, at the mouth of Grand Lake O' The Cherokees. Operable Unit 4 of the Tar Creek Superfund Site, Ottawa County, Oklahoma, in EPA Region 6, addressed flood plain or terrestrial soils, mine waste, seepage from mine waste, and standing water bodies (such as ponds) and therefore are not a part of the scope of OU5. Similarly, terrestrial soils, mine waste, and limited surface water bodies in the EPA Region 7 Cherokee County, Kansas Superfund Site are addressed under OUs 3, 4, 5, 6, 7, and 8 of that site, and floodplain soils will be addressed under OUs 2 and 9.

1.2 Operable Unit 5 Study Area Definition

Generally, OU5 is defined by EPA Region 6 as sediments and surface water in perennially flowing creeks, streams, and rivers within the Oklahoma portion of the TSMD that may be impacted by historical mining activities. The potential exposures addressed under OU5 are associated with the aquatic environment. The potential exposures addressed under OU4 HHRA included terrestrial small game and large game ingestion scenarios (EPA, 2006). The definition of OU5 has been further defined by EPA Regions 6 and 7

and site stakeholders for the purposes of conducting the above stated scope to include the following seven specific watersheds that flow downstream from EPA Region 7 states (Kansas and Missouri) into EPA Region 6 (Oklahoma):

- Fourmile Creek (an upstream background or reference location unaffected by historical mining activities)
- Elm Creek
- Tar Creek (including Lytle Creek)
- Neosho River
- Beaver Creek
- Lost Creek
- Lower Spring River (portion of Spring River downstream of Empire Lake in Kansas)

Locations of these seven watersheds are illustrated on Figure 1-2. The individual watersheds are presented on Figures 1-3 through Figure 1-9.

1.3 Mining History in Ottawa County

The following summary on the mine history in Ottawa County is adapted from the Hydrogeologic Characterization Study Report – Tar Creek Superfund Site Operable Unit 4 (CH2M, 2010). The first ore discoveries and earliest mining operations in Ottawa County, Oklahoma, occurred in the vicinity of Peoria (6 miles east and 1 mile south of Lincolnvile) in 1891 (Weidman, 1932). The next major ore discoveries occurred 1.5 miles northeast of Lincolnvile near Quapaw in 1902, followed by discoveries in 1905 near Commerce. The real expansion of zinc and lead mining at the site occurred after a major ore discovery in 1914 near the current site of Picher, Oklahoma. Following this discovery, there was a major expansion of mining in what became known as the Picher Field of Oklahoma and Kansas. By 1918, the Oklahoma section of the Picher Field was well defined by producing mines, with 230 mills built or under construction (Luza, 1986).

During the early mining period, most mining was conducted by small operators on 20- to 40-acre tracts. Each operator conducted his or her own mining, drilling, and milling activities. Mining activities occurred primarily within a 50- to 150-foot-thick ore-bearing zone within the Boone Formation. The maximum depth of mining was approximately 385 feet below ground surface (bgs). Mining was accomplished using room and pillar techniques. To remove the ore, large rooms, some with ceilings as high as 100 feet, were connected by horizontal tunnels known as drifts. Pillars were left within the rooms to support the ceilings. The lead and zinc ores were milled locally and generally sent to locations outside of Ottawa County for smelting. A small lead smelter (the Ontario Smelter) operated near Hockerville for a brief period, from 1918 until the early 1930s. Rapid expansion of mining activities occurred during the 1920s, and mining activities reached their peak around 1925.

In the 1920s, consolidation of milling began with one mill processing ore from several miners. By the 1930s, central mills were established, the largest being the Eagle-Picher Central Mill located between Cardin and Commerce, Oklahoma. Many miners ceased their own milling operations in favor of selling their ore production to one of the central mills or having their ore custom milled by these mills. This movement of ore between mines and the central mills resulted in an extensive network of haul roads and rail lines in the district.

During the peak of mining activities, 130,410 tons of lead and 749,254 tons of zinc were produced annually. Depletion of high-grade ores caused a marked decline in annual production after 1946, and depressed metal-market prices and decreased demand for lead and zinc metals forced a cessation of most mining activities in 1958 (Brichta, 1960). Smaller mining operations continued in the Picher Field

through the 1960s. The last record of significant production from Ottawa County occurred in 1970 (McKnight and Fischer, 1970).

With few exceptions, the crude ore produced at the site was mined using underground mining methods. Based on production records maintained by the U.S. Department of Interior, Bureau of Mines, a total of 181,048,872 tons of crude ore was produced from the Oklahoma portion of the district. Milling of this ore produced 8,884,898 tons of zinc concentrates and 1,686,713 tons of lead concentrates. With the exception of a limited amount of lead concentrates treated at the Ontario Smelter, all of the concentrates produced from the site were transported offsite for the conversion of the concentrates to metal by smelting (EPA, 2008).

The byproducts of the mining operation were discarded mining and milling tailings. The mill tailings are locally known as chat. Chat primarily consists of fine gravel-sized and coarse sand-sized rock fragments. Rock fragments are generally light gray to gray in color and are primarily sub-angular to angular pieces of chert, dolomite, and limestone. Chat is also composed of minor amounts of smaller intermingled source material such as medium to fine sands, silts, and clays. After the excavated rock was processed and the metal ore extracted, the mining tailings that remained were deposited into piles that were up to 200 feet in height. The piles of chat mining waste are collectively referred to as “chat piles” and many of these chat piles remain on the site. An inventory conducted in 2005, as part of the RI for OU4, identified 83 chat piles occupying 767 acres, with an estimated volume of 31 million cubic yards (CY), and 243 chat bases (or former piles) occupying 2,079 acres, with an estimated volume of 6.7 million CY (EPA, 2008).

In addition to piles of mining wastes, a large but lesser quantity of fine tailings ponds containing wastes from the flotation milling process and chat reprocessing operations were produced. Most of the flotation ponds have since evaporated, leaving behind a very fine mining waste sediment that remains on the site. During the field reconnaissance phase of the RI, it was discovered that fine tailings at the site actually consisted of two distinct materials: flotation tailings and washed fine tailings. Flotation tailings were generated during the extraction or milling process. Flotation tailings are gray to light brown in color and very fine-grained (mostly silt and clay, with minimal fine sands). Washed fine tailings were generated as a byproduct of washing chat for commercial aggregate sale and from chat reprocessing through the mills. Washed fine tailings are generally light gray to yellowish brown and consist mostly of fine sands and silts with some clay and medium sands. Washed fine tailings typically contain 75 to 85 percent of very fine- to medium-grained sands and 15 to 25 percent of silt and clay. The washed fine tailings were usually discharged first into a pre-existing flotation tailings pond (if present) next to the chat pile being washed or processed. The ponds were often expanded as necessary to accommodate continued washing. As a result, and with few exceptions, almost all of the flotation tailings at the site are covered with washed fine tailings, and there are portions of most fine tailings ponds that contain only washed fine tailings. Fine tailings generated from milling and washing chat are currently found in 63 ponds, occupying 820 acres, and total approximately 9.1 million CY, with a makeup of approximately 7.2 million CY (78.7 percent) washed fine tailings and 1.9 million CY (21.3 percent) of flotation tailings (EPA, 2008).

Over the years, the mining wastes have been used for a variety of purposes, including railroad ballast; concrete and asphalt aggregate; sandblasting sand; sandbag sand; roadway, driveway, alleyway, and parking lot aggregate; general fill material in residential areas; and impact-absorbing material in playgrounds. Chat is currently processed at the site by commercial chat washers for sale as aggregate, generating additional washed fine tailings as a byproduct. The washed chat is often sold as aggregate for use in road construction projects in accordance with the requirements of EPA’s chat use rule (40 *Code of Federal Regulations* [CFR] 278) and its preamble (72 *Federal Register* 39235). When mining operations ceased, it is estimated that underground cavities with a volume of 100,000 acre-feet (161,000,000 CY) had been created. In addition, approximately 100,000 exploratory boreholes were located within the Picher Field, mostly in Oklahoma. Within the Oklahoma portion of the mining district, 1,064 mine shafts existed. In addition, numerous water wells, used for milling operations, were abandoned (EPA, 2005).

During the active mining period, groundwater infiltration into the mine workings was a continual problem. Large-scale pumping was required to remove groundwater and maintain dry conditions within the mine workings. The pumping created a large cone of depression, effectively dewatering the Boone aquifer in the mining field. The sulfide ores of lead (galena), zinc (sphalerite), and iron (pyrite and marcasite) were oxidized by exposure to the moist air in the mine workings. Sulfide is oxidized to soluble sulfate during this process, releasing the corresponding trace metal into solution. When mining activities ceased, pumping from the mine workings ceased as well. The abandoned mine workings began to fill with infiltrating groundwater and surface water inflow through abandoned shafts, open boreholes, and collapse/subsidence features. As the mine workings filled with water, the oxidized sulfide minerals began to dissolve, generating a weak acidic solution. The acidic water then reacted with the surrounding rock, further dissolving sulfide minerals still contained in the mine workings. This resulted in increases in the concentrations of heavy metals, particularly iron, cadmium, lead, nickel, and zinc, in the water contained within the mine workings. The water also contained high concentrations of sulfate and total dissolved solids, high levels of hardness, and low pH. This process generated what is termed acid mine water (AMW).

1.4 Tar Creek Superfund Site Background

The Tar Creek Superfund Site is located in Ottawa County, Oklahoma. The site itself has no clearly defined boundaries, but consists of areas within Ottawa County impacted by historical mining wastes. The site is part of the larger TSMD that consists of historical lead and zinc mining areas in northeast Oklahoma, southeast Kansas, and southwest Missouri. The TSMD is composed of a total of four National Priority List (NPL) Superfund sites in Missouri and Kansas (EPA Region 7 states), and Oklahoma (EPA Region 6), including: the Cherokee County site, Cherokee County, Kansas; the Orongo-Duenweg Site, Jasper County, Missouri; the Newton County Mine Tailings Site, Newton County, Missouri; and the Tar Creek Site, Ottawa County, Oklahoma (MacDonald Environmental Sciences, Ltd.[MESL], 2010).

The site first came to the attention of the State of Oklahoma and EPA in 1979, when AMW began flowing to the surface near Commerce, Oklahoma from the underground mine workings, through abandoned mine shafts and boreholes. This surface discharge flowed into Tar Creek; and soon other discharge locations were observed near Tar Creek and the abandoned mining town of Douthat. As a result, most of the downstream biota in Tar Creek were killed. The bottom of the creek became stained red as a result of ferric hydroxide deposition, and red stains appeared on downstream bridge abutments and cliffs in the Neosho River downstream of its confluence with Tar Creek (EPA, 2005).

In response to the AMW discharge, in 1980, the Governor of Oklahoma established the Tar Creek Task Force, composed of various local, state, and federal agencies, to investigate the effects of acid mine drainage on the area's surface water. Based on the information discovered by the Tar Creek Task Force, EPA proposed to add the site to the NPL (40 CFR Part 300, Appendix B) in July 1981. The NPL is the list, compiled by EPA pursuant to the Comprehensive Environmental Response Compensation Liability Act, Section 105, of uncontrolled hazardous substance releases in the United States that are priorities for long-term remedial evaluation and response. The site was added to the NPL on September 8, 1983 (EPA, 2008).

1.5 Tar Creek Operable Unit History

Under the National Contingency Plan, an OU is defined as a discrete action that composes an incremental step toward comprehensively addressing site problems. This discrete portion of a remedial response manages migration or eliminates or mitigates a release, threat of release, or pathway of exposure. A site can be divided into a number of OUs, depending on the complexity of problems at the site. OUs typically address a discrete geographical portion of a site, specific-site problems, contaminated media, and the initial phase or phases of action at a site (CH2M, 2012).

Because of the complex nature of contamination associated with the Tar Creek site, site assessment and remediation has been handled through various investigations and removal response actions and RAs. As discussed in the OU4 Record of Decision (ROD) (EPA, 2008), the following five OUs have been designated at the site:

- OU1 – Surface water/groundwater
- OU2 – Residential areas
- OU3 – Eagle-Picher Office Complex – Abandoned Mining Chemicals
- OU4 – Mine and Mill Waste, and Smelter Waste
- OU5 – Sediments

RODs have been signed for OU1, OU2, and OU4. OU3 was a removal action that requires no further action. OU5 is currently being assessed and is the topic of this report. Further discussion of each OU is presented below.

1.5.1 Operable Unit 1

The first ROD signed by EPA for the site was in 1984. This ROD (EPA, 1984) applied to OU1, and addressed the following two concerns:

1. The surface water degradation of Tar Creek by the discharge of AMW
2. The threat of contamination to the Roubidoux aquifer from downward migration of mine water through leaking well casings and poorly sealed wells

Pursuant to the 1984 ROD, dikes and stream diversion channels were constructed to reduce the inflow of surface water to three mine shafts at the site and reduce the outflow of AMW from the subsurface to Tar Creek. In addition, abandoned wells that went through the Boone aquifer to the deeper Roubidoux aquifer were plugged to prevent contamination from the Boone aquifer and mine workings from seeping through failed well casings and poorly sealed wells and migrating downward to the Roubidoux aquifer. Abandoned wells that could threaten the Roubidoux are still being discovered and plugged as part of the Roubidoux Groundwater Monitoring Program for OU1. Groundwater quality within the Roubidoux aquifer also continues to be monitored under the Roubidoux Groundwater Monitoring Program (EPA, 2005). The fifth five-year review report (EPA, 2015a) indicates that the remedy for groundwater was protective of human health and the environment but that the surface water remedy does not meet applicable, relevant and appropriate requirements, but that those requirements have been waived under 40 CFR 300.430(f)(1)(ii)(C)(6).

1.5.2 Operable Unit 2

OU2 was established to address contaminated soil in residential areas of the site. In 1994, Indian Health Service test results concerning the blood lead levels of Indian children living on the site indicated that approximately 35 percent of the children tested had concentrations of lead in their blood exceeding 10 micrograms per deciliter ($\mu\text{g}/\text{dL}$), the level of lead in the blood the Centers for Disease Control (CDC) considered, at the time (CDC, 1991), to be a health concern. In August 1994, to address the threat of lead exposure to children, EPA began sampling soils at high-access areas (HAA) at the site, such as day cares, schoolyards, and other areas where children congregate. EPA sampled 28 HAAs between August and October 1994. The sampling detected significant concentrations of lead, cadmium, and other heavy metals in surface soils. In March 1995, EPA expanded its sampling activity to include all residences on the site (EPA, 2005).

In 1995, EPA began to excavate contaminated soil at HAAs and at site residences using its removal action authority. Concurrently, EPA began the RI and feasibility study (FS) for site residential areas, which became OU2. In 1997, EPA issued a ROD (EPA, 1997) to address contaminated soil in the residential areas of OU2. Through the removal actions and the RA required by the OU2 ROD, EPA has

excavated lead-contaminated soil at more than 2,295 properties. The remediation of the yards and the public areas, and the education and outreach programs implemented by the Ottawa County Health Department, are helping to protect the children's health. In 1996, data from the Oklahoma State Department of Health showed that among young children (aged 1 to 5 years) living at the site, 31.2 percent had a blood lead level at or above 10 µg/dL. By 2003, data published by the Agency for Toxic Substances and Disease Registry indicated that 2.8 percent of the children in that age group had a blood lead level at or above 10 µg/dL, which is slightly higher than the national level of 2.2 percent (EPA, 2005). However, the CDC more recently adopted a lower value of 5 µg/dL, and the EPA is currently re-evaluating its use of the 10 µg/dL value that the CDC no longer supports. In particular, the EPA recently released an Integrated Science Assessment for Lead, which concluded based on a review of currently available research that blood lead levels below 10 µg/dL are associated with decreased cognitive function in children and other effects in children and adults (EPA, 2013a). The fifth five-year review report stated that the OU2 remedy was expected to be protective of human health and the environment upon completion of the remedy (EPA, 2015a). Through 2015, 2,940 residential properties and HAAs had been remediated. New properties that require sampling assessment and remediation are being addressed through a cooperative agreement between EPA Region 6 and Oklahoma Department of Environmental Quality (ODEQ) (EPA, 2015a).

1.5.3 Operable Unit 3

OU3 was a former office and laboratory complex operated by one of the former mining companies located in Cardin. Numerous containers of chemicals were found at the site during 1998 and 1999. The EPA addressed OU3 through a removal action in 2000, and no further action was required for OU3 (EPA, 2005). The fifth five-year review report stated that the OU3 remedy is protective of human health and the environment (EPA, 2015a).

1.5.4 Operable Unit 4

OU4 addresses the undeveloped rural and urban areas of the site where mine and mill residues and smelter wastes have been placed, deposited, stored, or disposed of, or otherwise have come to be located as a result of mining, milling, smelting, or related operations. The OU4 ROD was signed in February 2008 and called for a phased approach to address the mining waste over a period of approximately 30 years. The ROD included a residential buyout that was managed by The Lead Impacted Communities Relocation Assistance Trust, with the buyout initiated in 2009, including residents of Picher, Cardin, and Treece, Kansas (EPA, 2015a). The decision to relocate the residents of Treece, Kansas, was documented in an explanation of significant differences to the OU4 ROD issued in April 2010, and the Lead Impacted Communities Relocation Assistance Trust buyout was complete in 2011 (EPA, 2015a).

The OU4 RA activities began in 2009 and are ongoing. These activities include the remediation of rural residential yards not included in the OU2 RA, remediation of a former lead smelter, removal and disposal of chat piles and chat bases in distal areas, the construction of the Central Mill Repository from a former fine tailings pond, and a fine injection pilot study (EPA, 2015a). Approximately 60 chat piles and chat bases (totaling approximately 1.6 million tons of chat, transition zone soils, and fine tailings) have been remediated, and 309,787 tons of chat have been sold (EPA, 2015a). The fifth five-year review report stated that the OU4 remedy is expected to be protective of human health and the environment upon completion (EPA, 2015a).

1.5.5 Operable Unit 5

As noted earlier, OU5 is currently in the RI characterization phase and is the subject of this document. Historically, EPA Regions 6 and 7 worked together as part of a multi-state effort to characterize sediment and surface water throughout the Spring and Neosho River basins. These efforts focused on collecting data to evaluate the toxicity of the sediments and the results were used to develop an

advanced screening-level ecological risk assessment (SLERA) of the TSMD (MESL, 2010). The advanced SLERA evaluated risks to aquatic organisms associated with exposure to contaminated environmental media. The results indicate that concentrations of metals in sediments commonly exceed conservative toxicity thresholds. The advanced SLERA was conducted using site-specific toxicity thresholds to provide a more reliable basis for identifying sediment samples that pose low, intermediate, and high risks to sediment-dwelling organisms and/or other aquatic receptors. Other investigations (CH2M, 2012; Kirschner, 2008; U.S. Geological Survey [USGS], 2006) investigated sediments in different OU5 watersheds and all detected elevated concentrations of metals in sediments.

1.6 Report Organization

This report is organized as follows:

- Section 1, Introduction: Provides an overview of the project and site background information
- Section 2, Environmental Setting: Describes the geological, hydrogeological, hydrology, meteorology and ecoregions of the site
- Section 3, Site Models: Presents the conceptual site model (CSM), conceptual contaminant transport model (CCTM), and conceptual exposure model (CEM) for the site
- Section 4, Historical Data Usability Assessment: Presents methods and approach to evaluating and assessing existing site information, literature resources, and analytical data
- Section 5, Data Requirements, Availability and Gap Assessment: Summary of each exposure medium, data requirements, and data availability for each exposure medium and data gap assessment
- Section 6, Data Gap Summary: Provides a summary of identified data gaps and proposed sampling program to address the gaps
- Section 7, References: List of all references cited in this report

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Environmental Setting

The following subsections briefly describe the geology, hydrogeology, hydrology, meteorology, and ecoregions of the site.

2.1 Geology

Ottawa County is located on the western flank of the Ozark uplift, a broad dome centered in southern Missouri and extending into northeastern Oklahoma. Because of the orientation on the western flank of this structural high, progressively younger formations crop out from the east to west. The uplift flank extends to the axis of the Miami Trough (described below). The predominant rocks in the study area are Paleozoic carbonate and clastic sedimentary rocks, which overlie a Precambrian granitic and igneous basement complex. The sedimentary rocks vary in age from Cambrian through Pennsylvanian, and range in total thickness from less than 1,200 feet in areas of granitic basement-rock highs to approximately 2,000 feet. The rocks at the surface within the site are Mississippian and Pennsylvanian age, while older rock units are only encountered in the subsurface. The regional dip of beds is toward the west and northwest, at between 15 to 25 feet per mile. Minor folding and faulting cause local variations to the regional dip (Reed et al., 1955; McKnight and Fisher, 1970; Luza, 1986; Christenson et al., 1990; ODEQ, 2006).

The major structural features in the site area are the Miami Trough and associated faults, the Bendelari Monocline, and the Rialto Basin. A structural high area also exists in the Douthat area, where older strata are present at the surface. The Miami Trough is a narrow trough, syncline, or graben-type structural feature. The trough extends from the west of Miami towards the north-northeast, west of Commerce and Cardin, and continues into Cherokee County, Kansas. The Miami Trough varies in width between 300 and 2,000 feet, with an average width of 1,000 feet. Vertical displacement along faults associated with the trough can range up to 300 feet. The Bendelari Monocline extends in a southeast-to-northwest direction, from near Picher up into Kansas. Strata dip to the northeast along the Bendelari Monocline. The Rialto Basin is a basin-like or synclinal feature that is approximately 1 mile long by .25 mile wide. The Rialto Basin trends east-west and is located in the northern portion of Section 29, Township 29N, Range 23E, just south of E30 Road. The major structural features are tectonic in origin, while the smaller features, such as the Rialto Basin, are possibly related to dissolution and subsidence along deep-seated fractures (Reed et al., 1955; McKnight and Fisher, 1970; Luza, 1986; Christenson et al., 1990; ODEQ, 2006).

The stratigraphy for the site is described in the following paragraphs, from deepest to near-surface.

Precambrian

Precambrian granite is the oldest strata encountered in the subsurface at the site. A number of wells and test holes in Ottawa County have been drilled down to the Precambrian granite. The granite is generally encountered at depths ranging between approximately 1,000 and 2,000 feet bgs in the mining area (Reed et al., 1955; McKnight and Fisher, 1970).

Cambrian – Lamotte Sandstone, Bonterre Dolomite, Potosi-Eminence Dolomites

Found at depths greater than 1000 feet below land surface, the Cambrian age units are, from oldest to youngest, the Lamotte Sandstone, Bonterre Dolomite, and Potosi-Eminence Dolomites. The Lamotte Sandstone is a mixture of sandstone, siltstone, and shale with a thickness from not present to 50 feet. The Bonterre Dolomite is a sandy dolomite also containing some chert, oolites, and shale. In some areas, the base is marked by a 20- to 40-foot-thick sand bed. The thickness ranges from not present to 180 feet. The Potosi-Eminence Dolomites (typically undivided in the literature) are cherty dolomites

containing some oolites, minor amounts of sand, and some shale. The thicknesses range from not present to 160 feet (Reed et al., 1955; Christenson et al., 1990; McKnight and Fisher, 1970).

Ordovician – Gunter Sandstone, Gasconade Dolomite, Roubidoux Formation, Jefferson City Dolomite, and Cotter Dolomite

Found at depths approximately 400 to 1,200 feet below land surface, the Ordovician age units are, from oldest to youngest, the Gunter Sandstone Member of the Van Buren Formation, Gasconade Dolomite, Roubidoux Formation, Jefferson City Dolomite, and the Cotter Dolomite (Reed et al., 1955; McKnight and Fisher, 1970). These geologic units together comprise the Roubidoux aquifer in northeastern Oklahoma (Christenson, 1995).

The Gunter Sandstone Member is a sandstone and sandy dolomite that is up to 40 feet thick. The Gasconade Dolomite is a cherty dolomite and sandy dolomite with sandstone layers.

The Roubidoux Formation is a cherty dolomite containing two or three sandstone layers in the middle and near the base. The Roubidoux in the area of the site ranges in thickness from not present to 190 feet, and averages about 175 feet. The sandstone layers are typically between 15 and 30 feet thick. The Cotter and Jefferson City Dolomites are cherty dolomites with lenses of sandstone. The Jefferson City Dolomite ranges in thickness between 270 and 340 feet. The Cotter Dolomite contains some dolomitic limestone and shale and ranges in thickness between 140 and 180 feet. The Swan Creek Sandstone Member is identified in some wells at the base of the Cotter Dolomite and is as much as 30 feet thick (Reed et al., 1955; McKnight and Fisher, 1970; Christenson et al., 1990; Christenson, 1995; ODEQ, 2006; Oklahoma Water Resources Board [OWRB], 1983c).

Devonian and Mississippian – Chattanooga Shale

Found at depths approximately 400 feet below the land surface, the Chattanooga Shale, of Devonian and Mississippian age, overlies the Ordovician-age geologic units. The Chattanooga Shale is black, fissile, carbonaceous shale, and can contain thin sandstone lenses at or near the base in some areas. In Ottawa County, thicknesses of up to approximately 30 feet are reported (Reed et al., 1955; McKnight and Fisher, 1970; ODEQ, 2006).

Mississippian – Compton Limestone, Northview Shale, Boone Formation, Quapaw Limestone, and Chester Series

Found at depth of approximately 350 to 400 feet below land surface, the Compton Limestone and Northview Shale of the Mississippian age, overlie the Chattanooga Shale in some locations within the mining field. The Compton Limestone is a shaley limestone that has a gradational contact with the overlying Northview Shale. The Northview Shale is a greenish-black or dull-blue shale. The combined thickness of these two units in Ottawa County is 30 feet or less (Reed et al., 1955; McKnight and Fisher, 1970; Christenson et al., 1990; Christenson, 1995).

The Boone Formation is a sequence of cherty limestone strata that outcrops in the eastern half of the site. The Boone contains beds of bluish gray to light gray limestone and gray to white chert. Some of the limestone is fossiliferous. The formation varies in thickness between 350 and 400 feet at the site. The Boone Formation is the primary host rock of the lead (lead sulfide – galena) and zinc (zinc sulfide – sphalerite) ores, and associated sulfide minerals in the Picher Field. The Boone Formation has been subdivided into seven members at the site (in order from oldest to youngest): St. Joe Limestone, Reeds Spring, Grand Falls Chert, Joplin, Short Creek Oolite, Baxter Springs, and the Moccasin Bend (Reed et al., 1955; McKnight and Fisher, 1970; Luza, 1986; Christenson et al., 1990; Christenson, 1995; ODEQ, 2006; OWRB, 1983c).

Several references refer to the Quapaw Limestone as the stratigraphic unit lying above the Boone Formation. The Quapaw Limestone is noted to occur in the eastern portions of the site. The unit is a

gray, medium- to coarse-grained, crinoidal limestone. The Quapaw Limestone, where present, is up to 30 feet thick (McKnight and Fisher, 1970; Luza, 1986).

The Chester Series, composed of the Hindsville Limestone, Batesville Sandstone, and Fayetteville Shale (from oldest to youngest), overlie the Quapaw Limestone in eastern portions of the site and the Boone Formation in the remainder of the site. The Chester Series rock units have a combined thickness of up to approximately 200 feet, but in some areas of Ottawa County, it was eroded and partially to completely removed before deposition of the overlying strata. The Hindsville Limestone is a gray, dense limestone with minor amounts of chert and some interbedded sandstone and shale. The Batesville Sandstone is fine-grained sandstone that contains some interbedded limestone and shale. The upper formation in the Chester Series is the Fayetteville Shale. The Fayetteville Shale is marine shale containing some limey portions, limestone beds, and coal seams. The Fayetteville Shale is not present in the area of the site (Reed et al., 1955; McKnight and Fisher, 1970; ODEQ, 2006).

Pennsylvanian – Krebs Group

The Pennsylvanian aged Krebs Group overlies the Mississippian strata and outcrops at the surface in western Ottawa County and most of the site west of Quapaw. The Krebs Group is composed of the Hartshorne Formation, McAlester Shale, Savannah Shale, and Bluejacket Sandstone Member of the Boggy Formation (from oldest to youngest). The Krebs Group is also referred to as the Cherokee Shale and, as a whole, is composed of predominantly shales, with some sandstone, siltstone, limestone, and coal beds. The Krebs Group is up to 200 feet thick in Ottawa County. The Krebs Group caps the ore containing rocks over most of the site; it also contains the sulfide minerals of iron, pyrite, and marcasite (Reed et al., 1955; McKnight and Fisher, 1970; ODEQ, 2006).

Quaternary Alluvium

The Quaternary aged alluvial deposits are materials deposited by streams during recent geologic time (the past 10,000 years). The Quaternary Alluvium is limited in extent to narrow areas along the flood plains of site streams. The deposits consist of clay to gravel materials, and are generally less than 30 feet thick (Reed et al., 1955; Stanley and Luza, 2006).

2.2 Soils

The following summary on soils is adapted from the Soil Survey of Ottawa County, Oklahoma (U.S. Department of Agriculture [USDA], 1964). The geology of Ottawa County consists mainly of Pennsylvanian shale and sandstone to the west, along with Mississippian cherty limestone to the east. The western section of the county, known as the Cherokee Prairies, has dominate soils that are from the Bates, Choteau, Collinsville, Dennis, Lightning, Osage, Parsons, Taloka, Verdigris, and Woodson series originating from the McCallister and Savannah formations or in in old alluvium. The eastern sections of the county, known as the Ozark Plateau, have dominate soils that are from the Baxter, Bodine, Craig, Eldorado, Etowah, and Huntington series originating from the Boone formation. There is some intermixed geology between the Cherokee Prairies and the Ozark Plateau, where the soils mainly consist of Craig, Choteau, Dennis, Eldorado, Huntington, Newtonia, Parsons, Summit, Taloka, and Woodson series originating from the Batesville, Fayetteville, and Morefield formations. The western part of the county is drained by the Neosho River, and the eastern part is drained by the Spring River. These rivers flow into the Grand Lake of the Cherokees, which is in the east-central part of the county and extends through Delaware County to the south. Most of the soils found in these regions consist of silty loams, with small quantities of sand and clay.

2.3 Hydrogeology

The Boone and Roubidoux aquifers are the two principal aquifers at the site and in the region of the OU5 watersheds. The shallower of the two is the Boone aquifer, which is found within the Mississippian-

age Boone Formation. The Boone aquifer overlies the Roubidoux aquifer. The two aquifers are separated by the lower permeability strata within the Ordovician-age Northview Shale, Compton Limestone, and the Devonian/Mississippian-age Chattanooga Shale (which is absent or very thin under a majority of the site). The Roubidoux aquifer is made up of the Ordovician-age Cotter Dolomite, Jefferson City Dolomite, Roubidoux Formation, and the Gunter Sandstone Member of the Gasconade Dolomite (Reed et al., 1955; Christenson, 1995; ODEQ, 2006).

Groundwater is used as the main source of drinking water at the site. The Roubidoux aquifer is the primary source of drinking water supplied by municipalities and rural water districts in Ottawa County; the aquifer is also used for industrial purposes. The Boone aquifer is used primarily for domestic and agricultural purposes in rural areas (Reed et al., 1955). Although specific uses of many of the Boone aquifer wells are not well documented, at least some of these wells, belonging to rural residents, are used as a source of drinking water.

Boone Aquifer

The Boone aquifer is the upper or shallow aquifer at the site and is found at very shallow depth up to over 400 feet below the land surface. The Boone aquifer is considered a karst aquifer. In outcrop areas, the Boone Formation is characterized by karst features, such as caves and solution openings, sinkholes, disappearing streams, and springs. Groundwater in the aquifer occurs as a result of secondary permeability within fractures, solution openings, and along bedding planes and erosional unconformities within the Boone Formation. These features are localized both vertically and horizontally as a result of the geologic processes that were active during the deposition of the Boone Formation and the structural history of the region. As a result of the heterogeneous distribution of permeability within the aquifer, the occurrence and availability of groundwater within the Boone aquifer varies widely (Reed et al., 1955; Osborn, 2001).

Recharge to the Boone aquifer occurs primarily as direct precipitation in areas where the Boone Formation crops out in Southwest Missouri, Northwest Arkansas, Southeast Kansas, and Northeast Oklahoma.

The aquifer also receives some recharge from streams that flow over the outcrop of the Boone Formation and from disappearing streams. Within the mining area, the Boone aquifer also receives some recharge directly through abandoned mine shafts, mine collapses, and open exploratory boreholes. Groundwater discharges through springs and as base flow to streams and through pumping at wells. Where the underlying confining units are absent or very thin, such as within the mining area, the potential exists that groundwater migrates downward to the underlying Roubidoux aquifer. The karst features of the Boone aquifer result in rapid recharge and groundwater flow rates; and water levels and discharge to springs and streams respond rapidly to rainfall. However, the same features also make the aquifer susceptible to contamination from surface sources (Reed et al., 1955; Osborn, 2001).

The aquifer is unconfined in outcrop areas and confined where the Krebs Group overlies the Boone Formation. Groundwater occurs under both conditions at the site. Regionally, groundwater flows in the Boone aquifer down-dip toward the west and northwest. In outcrop areas, where the aquifer is unconfined, groundwater also flows down-slope towards springs and streams (Reed et al., 1955; Osborn, 2001).

Aquifer properties of the Boone aquifer vary widely as a result of the heterogeneous nature and distribution of porosity and permeability within the Boone Formation. Pumping test data on the aquifer are also limited. Portions of the aquifer that consist of competent rock lacking fractures and solution openings are impermeable. In the mining area, where the formation is highly fractured, the aquifer is capable of producing large quantities of water. Wells completed in the aquifer can yield from less than 1 gallon per minute (gpm) to over 100 gpm (Reed et al., 1955; Osborn, 2001).

Confining Units

The Northview Shale, Compton Limestone, and Chattanooga Shale are the confining units present beneath the Boone aquifer, and separate it from the geologic strata that compose the Roubidoux aquifer. Many of the logs from the mining era do not show the Chattanooga Shale as present in the northern portion of Ottawa County, but its presence is noted on some logs for deep wells in the area and on deep well logs going farther south in Ottawa County (Reed et al., 1955).

Roubidoux Aquifer

The Roubidoux aquifer is the lower or deep aquifer at the site. The Roubidoux aquifer is the primary water supply used within Ottawa County and is encountered at depths ranging from approximately 800 to 1000 feet below land surface. The geologic units that compose the Roubidoux aquifer are the Cotter and Jefferson City Dolomites, the Roubidoux Formation, and the Gasconade Dolomite (and particularly the Gunter Sandstone Member). Groundwater is primarily produced from 2 to 3 sandstone layers that are 15 to 20 feet thick in the Roubidoux Formation. The degree to which the other formations produce water is not well understood, but is believed to be much less than the water obtained from the Roubidoux Formation.

Recharge to the Roubidoux aquifer occurs primarily through direct precipitation and from seepage in streams that flow over the outcrops of the geologic units that compose the aquifer. Outcrop areas for the formations making up the Roubidoux aquifer are fairly limited near Ottawa County. The primary outcrop areas are located 50 to 100 miles east of Ottawa County in the central part of the Ozark Mountains in south-central Missouri and north-central Arkansas. These areas are at higher elevation and, regionally, the deep aquifer dips westward and into the subsurface from these recharge areas toward Ottawa County. Discharge from the aquifer within Ottawa County occurs through pumping at wells (Reed et al., 1955).

Groundwater in the Roubidoux aquifer in Ottawa County occurs under confined conditions. Before 1915, most wells completed into the Roubidoux aquifer in Ottawa County flowed at the surface (the wells were artesian). These wells reportedly stopped flowing during the period when mining production increased rapidly between 1916 and 1920. During this period, the population of the area increased significantly, increasing the need for municipal supplies of water. Also, expanding milling operations required vast amounts of water, and deep wells were drilled to supplement water supplies obtained from surface sources and water pumped from the mine workings (Reed et al., 1955).

Lowering of the potentiometric surface of the Roubidoux aquifer has been documented over the past 100 years. By the late 1930s, water levels were about 100 feet bgs, and, by 1942, the water levels had declined to between 200 and 300 feet bgs. By 1944, groundwater withdrawal from the Roubidoux aquifer was approximately 2.25 to 2.5 million gallons per day (mgd). B.F. Goodrich Company completed a tire manufacturing plant in Miami in 1944. Six wells were installed into the Roubidoux aquifer to supply water to the plant. Groundwater withdrawal from the aquifer increased significantly at that time and was approximately 4 mgd by 1948. The USGS estimated that 4.8 mgd were withdrawn from the Roubidoux aquifer by 1981, with 90 percent of the water withdrawn in Ottawa County. The City of Miami and B. F. Goodrich Company pumped 75 percent of the water withdrawn in Ottawa County. The B. F. Goodrich Company plant closed in 1986, and water withdrawals from the aquifer decreased at that time (Reed et al., 1955; Christenson et al., 1990). A large cone of depression, centered on Miami, exists in the aquifer. Drawdown in the aquifer had reached as much as approximately 440 feet bgs between 1972 and 1986. The water levels recovered approximately 100 feet through 1993 after the B.F. Goodrich Company plant shut down (Christenson et al., 1990; Christenson, 1995; ODEQ, 2006).

Aquifer properties of the Roubidoux aquifer vary as a result of the heterogeneous nature and distribution of porosity and permeability within the geologic units composing the aquifer. A pump test was performed on three of the wells installed by B.F. Goodrich Company during 1944. The first test

lasted over 8 days, while the other two tests were approximately 46 and 48 hours long. Water levels were collected from observation (non-pumping) wells before, during, and after the two shorter tests. Water level data were collected from an observation well only during the later stages of the 8-day test. Most of the aquifer properties reported for Ottawa County are based on different analyses performed on the data obtained from these tests. Wells completed in the aquifer typically yield from 100 to over 1,000 gpm (Reed et al., 1955; OWRB, 1983c; Christenson et al., 1990).

2.4 Regional and Local Surface Water Hydrology

The Neosho and Spring rivers are the two primary watersheds that drain the regional area, and include all of OU5 as defined for this study. The Neosho River drains the majority of southeastern Kansas, flowing from the Flint Hills ecoregion into the Central Irregular Plains ecoregion, which extends into northeastern Oklahoma (EPA, 2013b). The Spring River is a tributary to the Neosho River. It flows through the Ozark Highlands ecoregion of southwestern Missouri and northeastern Oklahoma (EPA, 2013b). The combined watershed area at the confluence of the two rivers is 8,718 square miles, with 70 percent (6,129 square miles) composed of the Neosho River basin, and 30 percent (2,589 square miles) composed of the Spring River basin¹.

The seven watersheds that are the focus of this investigation are shown on Figure 1-2. Fourmile Creek, Elm Creek, and Tar Creek are subwatersheds to the Neosho River. They flow southward from Kansas into Oklahoma and confluence with the Neosho River a short distance upstream of the mouth of the Spring River. These streams are typically underlain by Pennsylvania shale and, as such, are subject to rapid runoff, flooding, and intermittent flow (AATA International, Inc. [AATA], 2005; EPA, 2005). Surface drainages in the eastern portion of the site flow into the Spring River. The surface geology of these drainages typically is Mississippian limestone, especially for drainages east of Highway 66 (AATA, 2005). These small streams have intermittent flows and include Hockerville, Ontario, and Beaver Creeks, and associated unnamed drainages in the eastern portion of the site (AATA, 2005). Lost Creek flows westward from Missouri into Oklahoma and confluences with Grand Lake O' The Cherokees approximately 6.3 miles downstream of the Spring River mouth. This watershed also drains the Ozark Highlands ecoregion and is underlain by Mississippian limestone. These streams are all generally characterized as meandering, gravel-bed channels.

The total watershed size is 466.3 square miles, with individual watersheds, as represented on Figure 1-2, summarized below.

- Fourmile Creek = 30.3 square miles
- Elm Creek = 22.7 square miles
- Tar Creek = 52.8 square miles
- Beaver Creek = 6.4 square miles
- Lower Spring River watershed = 221 square miles
- Neosho River = 37.3 square miles
- Lost Creek = 95.8 square miles

2.4.1 Surface Water Flow Characteristics

USGS Gaged Sites

The USGS maintains four, active, long-term streamflow gages within the OU5 study area. There are also data available from two gages that are no longer operational. The locations of the gages are shown on Figure 2-1 and listed in Table 2-1. The gage with the largest drainage area, 5,926 square miles, is located

¹ Drainage areas were computed using USGS StreamStats (2016b) (<http://streamstatsags.cr.usgs.gov/streamstats/>; website accessed November 6, 2016).

on the Neosho River near Commerce, Oklahoma. The gage with the smallest drainage area, 6.3 square miles, was located in Beaver Creek, upstream of its confluence with Spring River.

Annual flow statistics computed from the period of record of available water years are summarized in Table 2-1 for each gage. A water year begins October 1 of any given year and runs through September 30 of the following year. The ending date is used to denote the water year. For example, water year 2015 begins October 1, 2014, and ends September 30, 2015.

Some general approximations of flow characteristics, based on the data shown in Table 2-1, include that the annual mean flow per square mile of drainage area averages 0.88 cubic feet per second (cfs) per square mile; and the median flow per square mile averages 0.19 cfs. The median flow values associated with the Tar Creek and Beaver Creek gages are less than 10 cfs. The two Tar Creek gages with 10 or more years of data indicate an annual 7-day minimum flow of zero. The lowest of the annual 7-day minimum average flow during the period of record is also zero for the Neosho River gage; this minimum was measured during the drought of record in 1953.

A plot of monthly mean flows are shown on Figure 2-2. The data reveal a relatively consistent trend among the gaged stream sites of higher flows during March through June, and lower flows from July through February. Very little seasonal change is observed in the monthly average flows at the Beaver Creek gage site located near the mouth of the creek; however, the Beaver Creek data plotted in Table 2-2 only spans 2 years, which is not sufficient to identify a reliable trend.

Ungaged Sites

The USGS StreamStats web-based program was used to summarize basin characteristics and estimate peak flows for ungaged sites based on regional regression equations (USGS, 2016b). The ungaged sites evaluated are located at or near the mouth of Lost Creek, Tar Creek, Fourmile Creek, Elm Creek, and Beaver Creek. The drainage area, stream slope, mean annual precipitation, and peak flood flows generated by the StreamStats program are listed in Table 2-2. A majority of the peak flood flows estimated for the 2-year return-interval event are 1,000 cfs or greater for all watersheds listed in Table 2-2. This information reveals the relatively flashy nature of these generally low-gradient, meandering stream channels, subject to a relatively high mean annual precipitation of approximately 45 inches.

2.4.2 Mine Pool Contribution to Tar Creek

The following discussion is primarily adapted from the Tar Creek OU4 Hydrogeological Characterization Study Report (CH2M, 2010).

Historical mining activities have altered the drainage pattern of Tar Creek and its tributaries (Spruill, 1987; Luza, 1986). The mining areas of the Picher Field, including the Treece, Kansas subsite, and the Oklahoma mining areas at Commerce occur within the Tar Creek watershed (OWRB, 1983a). Tar Creek supplied water to the mills, received water pumped from the mine workings, and was channelized and directed to keep water from flowing into mine workings (Luza, 1986).

During the dry summer and winter months, stream flow is low to nonexistent in Tar Creek, upstream of the confluence of Tar and Lytle creeks. The majority of the stream flow that does occur is sustained by discharge from chat piles, chat bases, and tailings ponds (base flow). Downstream of the Douthat Bridge on East 40 Road to the U.S. Highway 69 Bridge east of Commerce, the majority of base flow during the summer and winter months is sustained by mine water discharges to Tar Creek (Cope et al., 2008).

In 1985, the USGS performed an evaluation relating the water levels within the mine workings to the amount of discharge from the mine workings to Tar Creek in the vicinity of Douthat Bridge. A rating curve was developed, relating the water level elevation in the mine pool to the amount of discharge from the mine workings to surface water. Based on the data, obtained between January 1984 and March 1985, it was estimated that the mean daily discharge from the mine pool was between 1.5 and

225 cfs. It was estimated that 3,400 acre-feet per year of mine water was discharged from the mine pool to surface water (Parkhurst, 1988).

An updated rating curve was prepared, using six different data sets of mine water discharge measurements from the mine pool between 1982 and 2007. These data sets were developed from data collected by OWRB, ODEQ, and University of Oklahoma, and provided by ODEQ. Both rating curves indicate that a relatively significant increase in mine water discharge from the mine pool to surface water occurs as the mine pool elevation approaches 803 feet above mean sea level (amsl).

Another surface water monitoring program was completed between December 2009 through May 2010 to refine the upper portion of the mine pool rating curves developed during the previous efforts. Because the results of past efforts showed good agreement during low-flow conditions, the focus of this effort was to quantify the mine pool contribution to surface water during wet-weather, high-flow conditions, when the mine pool elevations were at or above 802 feet amsl. The monitoring program was implemented based on input and support from the Quapaw Tribe of Oklahoma, ODEQ, and representatives of the University of Oklahoma.

Based on data collected as part of this monitoring program, some key findings of the surface water monitoring program that reflect the overall environmental setting included:

- Tar, Lytle, and Quapaw Creeks exhibited flashy stream flows, commonly experiencing little to no flow, subject to rapid increases into the hundreds of cfs in response to precipitation, with relatively quick recession.
- During the six significant runoff events of the study period, the initiation of mine pool elevation rise in the Douthat area occurred at essentially the same time as stage/flow increases in Tar and Lytle Creeks along E 30 Rd. The rapid response of the mine pool was indicative of fully saturated mine workings in the Tar and Lytle Creek watersheds. The underground mine workings in this area can be thought of as a fully saturated, closed-pipe system, such that incoming water to any point along the system results in a rapid increase in water level throughout the system.
- The shape of the mine pool rating curve, beginning at mine pool elevations of approximately 805.5 feet amsl, observed in the previously developed mine pool rating curves, was supported by data collected during this study.
- Runoff, event-based, average, mine pool discharge rates and instantaneous peak elevations indicate that the slope of the updated mine pool discharge rating curve begins to flatten out when mine pool elevations exceed approximately 803.5 feet amsl. Mine pool discharge rates associated with elevations of 803.5 feet amsl, range from about 60 to 120 cfs.
- Based on the updated mine pool discharge rating curve, and mine pool elevation frequency data, discharge rates from the mine pool equaling or exceeding approximately 65 to 140 cfs occur no more than 2 percent of the time.

Based on the results of the collective mine pool rating studies, it was surmised that the mine pool discharge exceeds 5 to 6 cfs only 25 percent of the time; and, approximately 50 cfs 10 percent of the time. Similarly, mine pool discharge that exceeds approximately 100 cfs occurs less than 2 percent of the time. The annual volume of mine pool discharge ranges from 3,755 acre-feet to 6,934 cfs. For a detailed presentation and discussion of the different mine pool rating curves and associated findings, refer to CH2M (2010).

2.5 Meteorology

The climate at the site is characterized as a humid, continental climate. Climate data were derived for the 1950 to 1980 period of record for the National Weather Service meteorological station in Joplin, Missouri. Joplin, Missouri is located 20 miles northeast of the site. The average annual temperature is

57.5 degrees Fahrenheit (°F). The region experiences hot summers, with average daily average temperatures of 80.1°F in July and 78.5°F in August. The spring and autumn are characterized by mild temperatures, with warm days and cool nights. Winters are generally moderate, except when arctic air masses move through the area. The average temperature in January, typically the coldest month of the year, is 32.6°F (AATA, 2005).

The average annual precipitation is approximately 42 inches. Most rainfall in the area occurs in the spring and early fall. However, 3-inch rainfall events could occur in the area during summer thunderstorms. The period of the year between November and February is the driest. Annual snowfall averages approximately 12 inches. The prevailing winds are southerly in all months, except January and February, when northerly winds predominate. Average yearly wind speeds are 10 to 12 miles per hour. Strong, gusty winds of 30 to 40 miles per hour could occur with summer thunderstorms and when cold fronts move through winter the area (AATA, 2005).

2.6 Ecoregions

Ecoregions denote areas of general similarity in ecosystems and in the type of, quality, and quantity of environmental resources (EPA, 2013b). The relative importance of each characteristic varies from one ecological region to another regardless of the hierarchical level. A Roman numeral classification scheme has been adopted for different hierarchical levels of ecoregions, ranging from general regions to more detailed.

The OU5 watershed study area is composed of the level I Great Plains ecoregion and level II Temperate Prairies and Ozark, Ouachita-Appalachian Forests ecoregion (EPA, 2013b). The primary level III ecoregions at the site are Tall Grass Prairie and Ozark Highlands, along with aquatic and riparian zones. There is a distinct separation between the two ecoregions, with the forested edge of the Ozark Highlands on the eastern portion and the Tall Grass Prairie grasslands on the western portion of the site (Harper et al., 2008).

Each of the level III ecoregions are further focused into level IV ecoregions. The site is primarily composed of the Cherokee Plains and the Springfield Plateau level IV ecoregions. The Cherokee Plains are known for their flat to gently sloping plains and wide valleys. Perennial streams moderately occur and typically have clay substrates. The Springfield Plateau is described by level to rolling highlands and karsts features, and underground drainage is common throughout the area. Perennial streams occur frequently and typically have small cobble and gravel substrates. The far western half of the site also includes the eastern edge of the Osage Cuestas, which includes irregular to undulating plains. Perennial streams are dominated by pools with sand, mud, and gravel/cobbles as the dominate substrate. The far eastern half of the site the western edge of the Dissected Springfield Plateau- Elk River Hills includes moderately to highly dissected portion of the Springfield Plateau region. Steep V-shaped valleys, karst features, and dry valleys are common throughout the region. The ecoregion is composed of cool springs, which contribute to the stream flow in the summer and fall. Because of the high erosion rates in the ecoregion, many of the channel reaches are blocked with cherty gravel, which causes them to become braided (Woods, et al., 2005).

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Site Models

The subsections below discuss the CSM, a CCTM, and the CEM.

3.1 Conceptual Site Model

The CSM is a description of a site based on existing site knowledge, and is often presented graphically or in tabular format. The CSM attempts to represent the nature, fate, and transport of contaminants that supports the assessment of potential contaminant exposure routes. The CSM presents the current understanding of the site, helps to identify where data gaps or knowledge gaps exist, and helps to focus the future data collection efforts (Interstate Technology & Regulatory Council, 2012). Developing a CSM is an iterative process of characterizing site contamination on the basis of available information or data. A CSM should be developed early in the site assessment program and progressively updated as additional information or data becomes available throughout the life cycle of the project (ASTM, 2014).

Significant historical information exists on the characterization of potential contaminant sources and exposure routes for sites within the TSMD and Tar Creek specifically, including past characterization work on OU5. Using this broad base of knowledge and information, a CSM for OU5 has been developed. The CSM is presented as Figure 3-1.

Surface waters that drain the OU5 region flow through three principal regional watersheds: the Lower Neosho River, Lower Spring River, and Lost Creek basins. Streams that drain the central and western portions of the Neosho River watershed include Tar Creek, Elm Creek, and Fourmile Creek, and associated tributary drainages. These are shown as separate OU5 watersheds on Figure 1-2. Tar Creek and its primary tributary Lytle Creek drain the most intensively mined areas of OU5. Tar Creek is characterized as a small ephemeral stream with standing pools. The headwaters of Tar Creek are located in Cherokee County, Kansas (north of Ottawa County on the Kansas-Oklahoma border). It flows through the Treece Subsite of the Cherokee County Superfund Site in Kansas, and then flows southward through the Picher Field between the towns of Picher and Cardin, to the east of Commerce and Miami, and then to its confluence with the Neosho River. Tar Creek and Lytle Creek drain over approximately 53 square miles. The streams of the Lower Neosho River watershed are typically underlain by Pennsylvania shale and, as such, are subject to rapid runoff, flooding, and intermittent flow (AATA, 2005; EPA, 2005).

The surface geology of the Lower Spring River and Lost Creek watersheds typically is Mississippian limestone; this includes the Boone Aquifer into which the mine workings penetrate. The Lower Spring River watershed contains many small streams that have intermittent flows and includes the Beaver Creek watershed (Figure 1-2) (AATA, 2005).

Based upon previous studies (MESL, 2010; Cope et al., 2008) runoff and seepage from mine waste, along with drainage from mine workings, are contributing to elevated surface water and sediment metal concentrations. Concentrations of these metals range from the tens to tens of thousands of micrograms per liter in the flowing drainage pathway water (MESL, 2010). The CEM, which illustrates exposure routes associated with these elevated concentrations, is discussed in Section 3.3.

3.2 Conceptual Contaminant Transport Model

The conceptual contaminant transport model is used to present the observed relationships between contaminant sources and contaminant release and transport mechanisms in the watersheds of OU5. Figure 3-2 provides a plan view of these relationships, each of which is discussed in additional detail below.

There are two principal sources of contaminants to the creeks: 1) mine and mill wastes, including chat piles, chat bases, and fine tailings, which contribute direct mine waste (that is, chat) to the creeks and

impacted runoff and seepage to the creeks; and 2) surface and subsurface flow from the flooded mine workings. The tailings and chat consist of coarse- to fine-grained mixtures of chert, carbonates, and minor sulfides that contain environmentally significant concentrations of trace metals. The finer-grained materials, in particular, tend to have the higher metals concentrations. Flow from the flooded mine workings carries dissolved concentrations of the products of the ongoing sulfide oxidation occurring within the exposed workings, including iron, sulfate, trace metals, and acidity.

The Tar Creek watershed has been one of the most extensively studied of the OU5 watersheds because of the high density of mine waste materials surrounding Tar and Lytle creeks. Much of the data and processes cited in this section were derived from studies in this area. It provides a well-documented example of the fate and transport processes that take place throughout OU5, but should be viewed as a worst-case scenario compared to the other watersheds.

3.2.1 Chat and Tailings

Chemical analyses of the pore water within sampled chat bases and piles indicate that these source areas contribute cadmium concentrations range up to 598 µg/L, lead concentrations up to 483 µg/L, and zinc concentrations up to 45,400 µg/L (CH2M, 2012). This pore water may potentially emerge as seepage into adjacent streams, contributing these metal concentrations to the watershed.

Chat thickness measurements in streambeds indicate the majority of the local streams have been adversely impacted by the deposition of coarse chat in the streams from previous mining activities at the site.

Tar Creek has been observed to have the greatest volume and depth of chat compared to Elm Creek, Lytle Creek, and Beaver Creek. The presence of chat in other OU5 watersheds is not known, but chat is reasonably expected to be present in localized areas adjacent to mining waste. Tar Creek, along with its tributary Lytle Creek, is surrounded by chat piles, bases, and tailings ponds. Beaver Creek has only a few chat bases on its banks and a corresponding small amount of source material in the stream. However, elevated thickness of coarse chat does not correspond directly to elevated concentrations of metals in sediment. Elm Creek is only bordered by tailings and has little to no coarse chat within the stream bed, yet had some of the highest sediment metals concentrations among OU5 creeks. These observations indicate that fine materials (either chat fines or tailings) tend to have the largest chemical impact on the stream sediment and surface water chemistry (MESL, 2010).

Runoff from chat piles and bases also contributes metal loading to the creeks. Concentrations of cadmium, iron, lead, and zinc range from the tens to tens of thousands of micrograms per liter in the flowing water drainage pathway (MESL, 2010). The runoff in the Tar Creek area constituted the largest source of cadmium, lead, and zinc to the creek water (Schaider et al., 2014). Both surface water and sediment concentrations of these metals are most elevated in creeks that receive chat runoff. During the dry summer and winter months, stream flow is low to nonexistent in Tar Creek upstream of the confluence of Tar and Lytle creeks. The majority of the stream flow that does occur is sustained by discharge from chat piles, chat bases, and tailings ponds (CH2M, 2010).

Chat that is washed into the creeks contains average levels of cadmium, lead, and zinc that are one to two orders of magnitude above those in surrounding soil and overall earth crustal abundance. In addition, there are substantially higher concentrations in the finer grain size fractions (Schaider et al., 2007). Selective extraction data show that a majority of the concentrations of all three metals in chat are in geochemically and biologically accessible forms (either adsorbed or in soluble carbonate phases), as opposed to insoluble forms such as silicates and sulfides (Schaider et al., 2007).

3.2.2 Mine Water Discharge

In addition to surface water runoff and chat pile seepage, surface and subsurface discharges from the underground mines mix with creek water and sediments. The historical mine workings are present in the

Boone Aquifer. Groundwater levels were lowered by pumping during mining activity, but have since been allowed to recover, flooding the open caverns of the mine workings. The residual sulfide minerals present in the mining zones are oxidized and dissolved by the flowing groundwater. In the case of the most abundant sulfide mineral, pyrite, this process produces acidity as well as dissolved iron, sulfate, and related trace metals. Although the pH of the mine water has been buffered in more recent years by the surrounding carbonate rock, the pH remains consistently lower than runoff and chat seepage water: 5.0 to 6.4 compared to 7.0 to 7.3 in the Tar Creek area (Schaidler et al., 2014). The mine water also contributes trace metals (although at lower concentrations than runoff) and is the major source of iron discharging to the creeks (Schaidler et al., 2014; Cope et al., 2008).

In the Tar Creek watershed, the Boone Aquifer is overlain by confining units, and discharges to Tar and Lytle creeks via upwelling of groundwater either directly into the creeks or to the nearby ground surface and running into the creeks. In the portions of OU5 east of U.S. 69, the confining units are mostly absent, with groundwater more directly discharging to the creeks (CH2M, 2010).

The USGS performed an evaluation in 1985, relating the water levels within the mine workings to the amount of discharge from the mine workings to Tar Creek. A ratings curve was developed, relating the water level elevation in the mine pool to the amount of discharge from the mine workings to surface water. Based on the data, obtained between January 1984 and March 1985, it was estimated that the mean daily discharge from the mine pool was between 1.5 and 225 cfs. It was estimated that 3,400 acre-feet per year of mine water were discharged from the mine pool to surface water (Parkhurst, 1988). The ratings curve used six different sets of mine water discharge measurements collected between 1982 and 2007. Both ratings curves indicate that a relatively significant increase in mine water discharge from the mine pool to surface water occurs as the mine pool elevation approaches 803 feet amsl.

3.2.3 Fate of Metals in Creek Water and Sediment

Trace metals will undergo chemical reactions once they discharge to the creeks. The most likely of these reactions is the precipitation of iron oxides from the iron-rich mine water discharge, as a result of exposure to dissolved oxygen and a rise in pH. All three of the trace metals of interest in OU5, especially lead, tend to adsorb to the surfaces of iron oxides, making these solids an effective attenuator of dissolved metals (Drever, 1997). The adsorbed metals will continue to be transported downstream in solid form, though more slowly than would occur if they were dissolved.

Precipitation of mineral oxides and carbonates of trace metals may provide limits on concentrations that remain in the dissolved phase, depending upon pH and other parameters such as redox conditions and dissolved organic matter (Sposito, 1989). However, these minerals are not always insoluble enough to keep metals concentrations below environmentally significant levels (such as maximum contaminant levels). Adsorption to sediment minerals provides further reduction in concentration. Chief among the adsorbent minerals are the iron oxides, described above, but adsorption also occurs on the surfaces of other oxides, clay minerals, and carbonates, where present (Sposito, 1989; Zachara et al., 1991).

3.3 Conceptual Exposure Model

The CEM builds on knowledge obtained from the CSM and the CCTM and identifies the specific exposure routes and receptor populations for each evaluated medium for OU5. The OU5 CEM (Table 3-1) was defined and agreed upon through resource and literature review, observations from the OU5 CSM, and, most importantly, a series of consultations with site stakeholders. Tribal stakeholder input, in particular, recommended the use of the Quapaw Traditional Lifeways Scenario (Harper et al., 2008) as the primary basis of formulating the CEM, and the CEM relies heavily upon this resource. In addition, tribal stakeholders provided valuable input on particular exposure media that are important from both a cultural and dietary consumption standpoint.

The routes of exposure that will be evaluated include ingestion and dermal contact for both the general public and Tribal members and citizens; both adult and child exposures will be evaluated. Exposure

media include sediments, surface water, mine discharge, and aquatic biota. The exposure media will be evaluated quantitatively with the exception of waterfowl, which will be evaluated qualitatively.

A summary of each medium, including potential exposure points, receptor populations, and a rationale for including the exposure pathway is provided below.

3.3.1 Sediments

Previous studies (CH2M, 2012; MESL, 2010; Kirschner, 2008, USGS, 2006) have determined that site sediments are impacted by metals. Sediment may be contacted by Tribal members and citizens or the general public, by both adults and children, during recreational activities (swimming, fishing, wading, and hunting), thereby completing the exposure pathway for incidental ingestion and dermal contact. Based on these points, sediments will be evaluated in the HHRA.

3.3.2 Surface Water and Mine Discharge

Previous studies (CH2M, 2012; MESL, 2010; Kirschner, 2008; USGS, 2006; and EPA STORET, 2016) have determined that site surface water and mine discharge are impacted by metals. Surface water in site watersheds may be contacted by Tribal members and citizens or the general public during recreational activities (swimming, fishing, wading, and hunting), thereby completing the exposure pathway for incidental ingestion and dermal contact. Surface water in site watersheds may also be used for cultural practices, such as a sweat lodge by Tribal members and citizens, thereby completing the exposure pathway for ingestion and dermal contact. Surface water may also be used as a potable source by Tribal members and citizens or the general public, resulting in ingestion and dermal contact exposures. In addition, mine discharge, which is found in localized areas at the site, also presents a potential dermal contact exposure route for both Tribal members and citizens and the general public. Based on these rationale, surface water and mine discharge will be evaluated in the HHRA.

3.3.3 Aquatic Biota

Based upon previous studies (MESL, 2010; Cope et al., 2008), runoff and seepage from mine waste and drainage from mine workings are contributing to elevated concentrations of metals in surface water and sediment. Concentrations of these metals range from the tens to tens of thousands of micrograms per liter in the flowing water drainage pathway (MESL, 2010). Trace metals in water and sediment are taken up by lower aquatic organisms and aquatic plants, resulting in potential bioaccumulation of excess metals. As the lower aquatic flora and fauna are consumed by higher trophic-level aquatic biota, the metals are transported through the ecosystem. The higher aquatic organisms may be used for human consumption.

Six exposure media were identified for aquatic biota that may be consumed by the general public and/or Tribal members and citizens. Each exposure medium and relevant exposure scenario is described below.

3.3.3.1 Fish

Fish are present and may be caught from the OU5 watersheds. Such fish may be ingested by the general public and Tribal members and citizens. More specifically, members of the general public and Tribal members and citizens may consume both game and non-game fish. Harper et al. (2008) cites the importance of fishing and fish consumption to tribal subsistence practices. Previous studies completed by ODEQ (2003b and 2007) determined that increased levels of lead are present in fish collected in Tar Creek area mill ponds, the Spring River, the Neosho River, and Grand Lake O' The Cherokees. These data were used by the State of Oklahoma to support the issuance of a fish consumption advisory for the Tar Creek area, including Grand Lake O' The Cherokees (ODEQ, 2010). Based on these rationale, both non-game and game fish will be assessed in the HHRA. Tribal members and citizens indicated that they consume fish in three ways: 1 - gutted (eviscerated) headless fish (including bones), 2 - fish heads only (e.g., in soup), and 3 - filet only (CH2M, 2016b). The general public is expected to consume only the filet.

3.3.3.2 Shellfish

Shellfish, specifically mussels and crawfish, are present and may be collected from the OU5 watersheds and consumed by Tribal members and citizens. Harper et al. (2008) cites the importance of mussel collection and consumption to tribal subsistence practices. A study completed by the Kansas Department of Health and the Environment (KDHE) (Angelo et al, 2007) in the Spring River basin determined that mussels have elevated concentrations of metals present in the tissue that was analyzed. The KDHE report concluded that analytical results for Asian clams paralleled those of other mussel species and are, therefore, recommended as a surrogate species for mussels. This conclusion was supported by the tribal stakeholders who further recommended that Asian clams be assessed because of their relative abundance (CH2M, 2016b) and the current stresses on the population size of mussels. Based on these rationale, consumption of Asian clams will be assessed in the HHRA to represent shellfish consumed in OU5.

3.3.3.3 Waterfowl

Waterfowl, namely migratory waterfowl, such as ducks, are present within the OU5 watersheds. Such waterfowl may be caught and ingested by the general public and Tribal members and citizens. Harper et al. (2008) cites the importance of waterfowl collection and consumption to tribal subsistence practices. Tribal stakeholders indicated that just the duck breast meat is consumed, and internal organs are too small and not consumed (CH2M, 2016a). A report by Beyer, et al., (2004) identified elevated metal concentrations in waterfowl organ tissues, but samples of duck breast meat/tissue were not processed and analyzed for metals as part of the study.

The migratory nature of waterfowl will make it difficult to link metal concentrations in duck breast, if any, to specific surface water and sediment concentrations in OU5. To further research this exposure medium and route, a literature search was completed. A study was identified for the Bunker Hill Superfund Site, often referred to as the Coeur d'Alene River Basin Cleanup Site, that is located in northern Idaho and eastern Washington where early mining and milling methods led to environmental contamination from mine wastes. This site is very similar to the Tar Creek site and other sites within the TSMC. That study determined that metal concentrations are low in duck breast tissue. The HHRA (TerraGraphics, 2001) states the following:

Both residents and nonresidents might hunt, capture, and eat waterfowl and large game in the area, thus being exposed indirectly to inorganic chemicals... Exclusion of this pathway for waterfowl is supported by previous Basin studies that investigated tissue metal concentrations in waterfowl (Weston 1989). Results indicate that although metals tend to accumulate in kidneys of ducks collected within the Coeur d'Alene Wildlife Management Area, the concentrations are not high enough to pose a health threat due to the consumption of other tissues (Weston 1989). A study conducted by the Idaho Department of Fish and Game in August 1986 found that cadmium and lead were not detected in most duck breast tissue sampled even though both metals were detected in significant concentrations in kidney, liver, and bone. Similarly, zinc was detected in breast tissue at concentrations 50 to 90 percent lower than those in kidney, liver, and bone (Krieger 1990). Therefore, this pathway was not quantified in the HHRA.

Based on the above rationale, waterfowl (ducks) will be qualitatively assessed in the HHRA by reviewing and incorporating the findings of the Coeur d'Alene River Basin Cleanup Site where tissue metal concentrations in waterfowl were found to be relatively low.

3.3.3.4 Aquatic Plants

Aquatic plants are present in all OU5 watersheds, and some are collected by Tribal members and citizens for medicinal use or consumption. Harper et al. (2008) acknowledges the importance of plant collection and consumption to tribal subsistence practices. Input from tribal stakeholders was received

and consensus was reached on two representative plant types: duckweed and arrowhead root (CH2M, 2016a). Tribal stakeholders indicated that both plants are expected to be present in all OU5 watersheds, and that both plants grow in the aquatic, wet, or saturated bank-to-bank portion of site watersheds, as defined by OU5. The entire duckweed plant is collected, washed, and consumed; and the entire arrowhead root plant is used for medicinal or food purposes (CH2M, 2016b). Tribal members and citizens indicated that they use the arrowhead root plant in three ways: 1) consumption of the washed tuber only, 2) medicinal consumption or dermal application of the washed fine roots only, and 3) tea consumption from the washed leaves only (CH2M, 2016b). Based on these rationale, two aquatic plants, duckweed and arrowhead root, will be evaluated in the HHRA to represent aquatic plants consumed in OU5.

3.3.3.5 Amphibians and Reptiles

Aquatic amphibians and reptiles, such as frogs and turtles, were not initially identified as potential exposure media under OU5. However, based on tribal stakeholder input, they were identified because both are exposed to OU5 sediments and surface water, are present within the OU5 watersheds, and are consumed by some Tribal members and citizens. Tribal stakeholders indicated that both frogs and turtles were collected and consumed, but that frogs are more commonly consumed than turtles (CH2M, 2016a). Tribal members and citizens also specified that only the rear (hind) legs of a frog were consumed, and that bullfrogs were the type of frog consumed (CH2M, 2016b). These exposure media were not evaluated under previous Tar Creek studies, such as the HHRA for OU4. Based on the above rationale, bullfrogs will be assessed in the HHRA to represent amphibians and reptiles consumed in OU5.

3.3.3.6 Semi-Aquatic Mammals

According to the tribal stakeholders, semi-aquatic mammals such as raccoon are consumed by some Tribal members and citizens, and are common and present within all OU5 watersheds. Harper et al. (2008) acknowledges the importance of semi-aquatic mammals to tribal subsistence practices. Tribal members and citizens specified that only the meat (no organs) of a raccoon is eaten (CH2M, 2016a). Based on the above rationale, raccoons will be assessed in the HHRA to represent semi-aquatic mammals consumed in OU5; although, because raccoons are known to carry parasites, consumption should be avoided.

3.3.4 Consideration of Other Exposure Media

The potential exposures addressed under OU5 are associated with the aquatic environment. Terrestrial small game (birds and rabbits) and large game (deer) were previously addressed under the terrestrial scenarios in OU4 (EPA, 2006). Also, source material waste was addressed by Tar Creek OU4.

Specifically with respect to deer, the Tar Creek OU4 HHRA addressed deer meat exposure by Native Americans, assuming that deer uptake of metals is similar to uptake by beef/cattle. The deer meat concentrations were modeled from soil concentrations, and risks were estimated for Native Americans who have a high-game diet. Deer consume very little or no sediment, so deer meat concentrations are not expected to be underestimated by the use of soil data.

Although the data are outside the scope of OU5, opportunistic deer samples (deer meat, heart, kidney, and liver) were collected by the Peoria Tribe and provided to EPA in February 2017 to supplement the previous work performed under the OU4 HHRA. EPA analyzed the samples and the results will be provided to Peoria Tribe representatives for their use.

Historical Data Usability Assessment

It is widely acknowledged by OU5 stakeholders that a significant amount of existing information and data are available that are directly relevant to the OU5 scope. Site stakeholders identified and contributed information, resources, and data sets in response to multiple data requests issued by EPA, dating back to 2015, when the project was being conceptualized and formulated. In almost all cases, this historical work has been performed following sound scientific methods by federal, state and local agencies. A key objective for OU5 is to maximize the use of this vast amount of site knowledge, resources, and analytical data to help achieve the OU5 scope. To maximize the use of existing literature and data, the usability of available data and reports for the RI and HHRA was evaluated.

4.1 Historical Resource and Data Compilation

The literature and data resource compilation effort began through EPA's requests to site stakeholders for any information, scientific studies, and data they were aware of that related to sediments, surface water, or human health exposure. Information and data were specifically requested if they were related to any one of the seven watersheds identified as part of the OU5 study area.

Resources were identified through stakeholder engagement, coordination with the EPA Remedial Project Manager, internal CH2M project resources, and internet searches. The majority of the data resources from the TSMD were compiled from EPA Region 6 and Region 7. These documents included the various RI/FS and HHRA studies conducted at the Tar Creek, Cherokee County, KS, and Jasper County, MO, sites. Literature and data from the TSMD were also compiled from other federal agencies including the USGS, the Natural Resources Conservation Service (NRCS), the U.S. Fish and Wildlife Service, and U.S. Army Corps of Engineers. Literature and data from the various State agencies were compiled for the report and included the ODEQ, OWRB, and KDHE. Other sources of data that were obtained and relevant to the OU5 scope included the Quapaw Tribe of Oklahoma, Peoria Tribe of Indians of Oklahoma, Miami Nation of Oklahoma, Ottawa Tribe of Oklahoma, Eastern Shawnee Tribe of Oklahoma, Wyandotte Nation of Oklahoma, Cherokee Nation, Modoc Tribe of Oklahoma, Seneca-Cayuga Tribe of Oklahoma, and the Shawnee Tribe.

A resource log was developed to identify and list all the resources that were identified and to catalogue the resources (Appendix A). A project SharePoint site was established to store the literature and resources in one location, with accessibility offered to external stakeholders.

4.2 Historical Data Usability Assessment

Various EPA guidance documents are available that address approaches for evaluating existing data for use in site evaluations and risk assessments. EPA guidance (2002) indicates that the criteria for accepting existing information (called acceptance or performance criteria) should be tailored to the type of information under consideration based on the principle of a graded approach, in which the level of quality assurance applied to the information is commensurate with the intended use of the information and the degree of confidence necessary in that information.

EPA guidance (2012) provides an approach for assessing existing scientific and technical information, using five general assessment factors: soundness, applicability and utility, clarity and completeness, uncertainty and variability, and evaluation and review. These factors are further defined as follows:

1. **Soundness** – The extent to which the scientific and technical procedures, measures, methods, or models employed to generate the information are reasonable for, and consistent with, the intended application.

2. **Applicability and Utility** – The extent to which the information is relevant for the agency’s intended use.
3. **Clarity and Completeness** – The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations, and analyses employed to generate the information are documented
4. **Uncertainty and Variability** – The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods, or models are evaluated and characterized.
5. **Evaluation and Review** – The extent of independent verification, validation, and peer review of the information or of the procedures, measures, methods, or models.

Based on EPA guidance referenced above, a series of questions was compiled into a checklist for use in reviewing each existing dataset or document. A technical memorandum was prepared (Appendix B) that summarized the overall approach to assessment of historical resources and data, and included a copy of the blank checklist. This technical memorandum was the culmination of previous memoranda on the subject; it accommodated comments, input, and discussion from the project stakeholders. A document with responses to stakeholder comments was prepared; the response document is included as Appendix C.

Literature and data that were found to be acceptable through the data review and checklist process are identified on the resource log (Appendix A). Copies of the checklist for each reviewed resource are presented in Appendix D.

From this comprehensive listing of acceptable literature and data sets, the specific analytical data sets that were deemed acceptable for use in the RI and HHRA are identified in Table 4-1. The data sets were requested from the author or source of the data so that the data could be loaded into the project database. In most cases, the data were provided but two data sets were not received as of December 2016; these are noted in Table 4-1. If the data sets that have not been obtained are received later, or new data sets are identified and are made available, accommodations will be made to incorporate this information into future phases of the project.

4.3 Management of Historical Data

An extensive search for candidate data sets was conducted that included review of over 150 historical resources to identify potential data sets for inclusion in a comprehensive project database. Some of the historical resources reviewed were dismissed as not applicable and are therefore not included in Appendix A. Appendix A provides information for 148 relevant historical resources that make up a comprehensive project database. The content of identified data sets represented both spatial and analytical data. Data considered to be pertinent to project needs were then evaluated for content and quality. Checklists were completed for each data resource; these checklists include data usability based on soundness, applicability and utility, clarity and completeness, uncertainty and variability, and evaluation and review. An overall conclusion was determined as to whether the data resource could be used for the HHRA and RI. Those data sets meeting data usability criteria were then included in a comprehensive data set for evaluation in this data gap analysis report. The data sources include EPA STORET (Storage and Retrieval), USGS, CH2M, MESL, universities, and stakeholder tribes. These sources are summarized in Table 4-1. Media types include sediment, surface water, and biota (plant, fish, and mussel) samples, with sample dates ranging from 2001 through 2016.

A significant amount of surface water data were extracted from EPA’s STORET database. The STORET database is an electronic database developed by EPA for managing water quality monitoring data; the name is derived from the term “STORage and RETreival”. This database was developed to assist data

owners who manage data locally and share data nationwide. Data loaded into STORET is collected under approved data quality management programs.

The Tar Creek OU5 data set is managed using a SQL server-based data repository, and uses EarthSoft's EQuIS 6 environmental data management system as the user interface. Following the consolidation of data in EQuIS, the data set was evaluated by the project team for completeness, using both semi-automated and manual approaches. Any data deficiencies identified during the review were then researched using source documents. In some instances, supplemental data were requested from the original data source to address data gaps. Missing information that required further investigation was media type, location, and test methods. For surface water, it had to be determined if the sample was collected from the streams/rivers or localized ponds. Test analysis also needed to be investigated to sort samples by filtered and unfiltered (total metals and dissolved metals, respectively). Finally, water samples had to be further categorized as surface water or mine discharge.

Sediment data were further investigated to determine the depths of samples collected. Samples collected within the first 12 inches are deemed acceptable for the HHRA. It was also necessary to determine if sediment samples were sieved or unsieved, and whether they were a grab or composite samples.

Additional information had to be verified for biotic data. Collected fish data consisted of numerous tissue samples, such as eggs, carcass (headless, eviscerated fish with muscle and bones intact), filet, and whole body, which required additional clarification. Also, sample type (composite versus individual) and plant part (e.g., stem versus root) were investigated for mussels and plants. Determining sample locations involved an extensive effort for the data sets. Locations were determined by searching for latitude and longitude (or northing and easting). Location information was often not included with the data set, but was provided within the report requiring manual loading of this information into the project database. The locations were then mapped, and it was determined if they were within the OU5 study area. If a location was in the OU5 study area, then it was assigned to a specific watershed within OU5.

After the above noted efforts, the resulting data set is considered to be of good quality and ready for use in subsequent data evaluations.

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Data Requirements, Data Availability, and Data Gap Assessment

The following subsections introduce each exposure medium, the data requirements for each medium, the existing data available for each medium, and a data gap assessment on each medium.

5.1 Sediments

For the RI, sediments from the seven OU5 watersheds will be assessed for nature and extent of contamination within each watershed. Data from all watersheds will be used collectively for evaluation in the HHRA, with the exception of sieved data and data collected from a depth profile of greater than 1-foot. Sediment from rivers and creeks present a potential exposure route through dermal contact or incidental ingestion during recreational activities, such as wading, swimming, fishing, and hunting. Based on historical site sediment studies, elevated concentrations of metals, most notably cadmium, iron, lead, and zinc, are present in site watersheds.

5.1.1 Data Requirements

Sediment analytical data should be from the upper 0- to 1-foot sediment interval for the purpose of the HHRA, and be unsieved. These data, as well as other available sediment data that may not be compliant with the HHRA needs (including sediment data collected over a larger depth/thickness profile or that has been sieved), will also be used to characterize the nature and extent of contamination. Assessment of sediments found at depths greater than 1 foot are not anticipated to be exposed to humans or biota related to this study within the watersheds at Tar Creek. Additionally, humans and biota are directly exposed to the fine and coarse portions of the sediment; therefore, sieved data does not meet the HHRA data needs for this study.

5.1.2 Data Availability

Sediments within OU5 site watersheds, and within the watersheds of the TSMD, have been extensively studied. While there were many resources identified related to sediments, 8 reports or data sets were determined to have data useable for the OU5 scope. Electronic data were obtained for these reports and loaded into the project database. The reports are identified and briefly discussed below:

- EPA, Region 7. 2015b/2016a. "Results of Sample Analysis." June 3 and EPA. 2016a. "Supplemental Sampling at OU 04 – Treece Subsite, Cherokee County, Kansas." Google Earth Pro. March 14. This sediment data was collected in the headwaters of Tar Creek in Cherokee County, Kansas, in support of a remedial design.
- Tribal Environmental Management Services, LLC (TEMS). 2014. *Analysis of Heavy Metals (Pb, Zn, Cd) in Culturally Significant Plants within the Grand Lake Watershed of Northeastern Oklahoma*. Prepared by Ean M. Garvin, Meredith S. Garvin, and Cas F. Bridge. Prepared for: The Six Treaty Tribes of Oklahoma. September. This report summarizes sampling of culturally significant plants and associated terrestrial soils, sediment and surface water.
- CH2M. 2012. *Integrated Site Assessment/Investigation, Version 2.0*. Tar Creek Superfund Site OU5, Ottawa County, Oklahoma. March. This study conducted sediment and surface water sampling and other activities between 2009 and 2010 on Elm Creek, Tar Creek, Lytle Creek, and Beaver Creek. The study also focused on determining the presence and thickness of chat in these streams.
- MESL. 2010. *Advanced Screening-level Ecological Risk Assessment for Aquatic Habitants within the Tri-State Mining District Oklahoma, Kansas, Missouri, Draft Final October 2009, revised May 2010*.

Tri-State Mining District (Missouri, Oklahoma, Kansas). May. This report evaluated risks to aquatic organisms associated with exposure to contaminated environmental media.

- USGS. 2009. *Selected Metals in Sediments and Streams in the Oklahoma Part of the Tri-State Mining District, 2000–2006*. Tri-State Mining District, Oklahoma. Lakebed, streambed, and floodplain sediment samples and surface water samples were collected between 2000 and 2006 from 30 sites in Oklahoma.
- Kirschner, F.E., AESE, Inc. 2008. *Site Characterization Report: Sediments, Surface Water, and Vegetation of Tar Creek, Lytle Creek, and Beaver Creek, Oklahoma*. TC, Lytle Creek, Beaver Creek Oklahoma. January. Sediment samples, along with plant and surface water samples, were collected from Fourmile Creek, Tar Creek, Lytle Creek, and Beaver Creek in 2005 and analyzed for metals.
- Angelo et al. 2007. “Residual Effects of Lead and Zinc Mining on Freshwater Mussels in the Spring River Basin (Kansas, Missouri, and Oklahoma, USA).” *Science of the Total Environment*. Robert T. Angelo, M. Steve Cringan, Diana L. Chamberlain, Anthony J. Stahl, Stephen G. Haslouer, and Clint A. Goodrich, Authors (KDHE). July 31.
http://www.sciencedirect.com/science?_ob=ArticleListURL&_method=list&_ArticleListID=1091403554&_sort=r&_st=13&_view=c&_md5=58c8b5ce368d05dd2bd6d3df69105d96&searchtype=a
- USGS. 2005. *Assessment of Contaminated Streambed Sediment in the Kansas Part of the Historic Tri-State Lead and Zinc Mining District, Cherokee County, 2004*. Streambed sediment samples were collected in 2004 from 87 sites in the Spring River and Tar Creek watersheds in Kansas.

The sediment data from the above reports were incorporated into the project database, and organized and catalogued in a manner to allow assignment of the data to each watershed. As a result of this effort, data tables were produced that summarize the available data for each watershed, and for all watersheds combined (that is, the entire OU5 area). Tables 5-1a through 5-1g summarize the cadmium, lead and zinc analytical data for each watershed. Table 5-1h provides a comprehensive summary of the cadmium, lead and zinc analytical data for the seven OU5 watersheds. Figure 5-1 shows the locations of all sediment samples collected within the OU5 watersheds and used to develop the data summary tables. The USGS, 2005 data set referenced above is slightly aged, meaning it exceeds the 10-year historical data criterion that was part of the data usability assessment process. However, after evaluating this study, the analytical data and quality control methods employed were determined to be acceptable and the data was considered usable for the purposes of the HHRA and nature and extent evaluation.

5.1.3 Data Gap Assessment

As indicated by the sediment data summary tables, a significant amount of sediment data is usable for the HHRA and for the characterization of nature and extent of contamination. HHRA data gaps exist for Fourmile Creek, Elm Creek and Lost Creek, and must be addressed by the collection of additional samples.

Because of the existing historical data that are usable for the nature and extent evaluation in each watershed, and future sediment samples will be collected to fill the HHRA data gaps (and will also be used for the nature and extent evaluation), no additional data gaps were identified for characterization of nature and extent of contamination in sediments.

5.2 Surface Water

Surface water from the seven OU5 watersheds will be assessed for nature and extent of contamination within each watershed. Data from all watersheds will be used collectively for evaluation in the HHRA. The potential exposure routes for surface water are ingestion (incidental or purposeful) and dermal

contact through recreational activities (such as wading, swimming, fishing, or hunting), use as a potable water source, or use in sweat lodges.

5.2.1 Data Requirements

For the purpose of the HHRA, surface water data should consist of unfiltered (total) metals data. For the purpose of determining the nature and extent of contamination, surface water data should also include filtered data.

5.2.2 Data Availability

Surface waters within OU5 site watersheds, and within the watersheds of the TSMD, have been extensively studied. While there were many resources identified related to surface water, 7 reports or data sets were determined to have data useable for the OU5 scope. Electronic data were obtained for these reports and loaded into the project database. The reports are identified and briefly discussed below.

- Nairn, Robert W. Director, University of Oklahoma, Center for Restoration of Ecosystems and Watersheds. 2016. OU CREW Tar Creek Master Archive. Internal MS Excel spreadsheet. July. Contains both surface water and mine discharge data collected from 2004 to 2016.
- CH2M. 2012. *Integrated Site Assessment/Investigation, Version 2.0*. Tar Creek Superfund Site OU5, Ottawa County, Oklahoma. March. This study conducted sediment and surface water sampling and other activities between 2009 and 2010 on Elm Creek, Tar Creek, Lytle Creek, and Beaver Creek. The study also focused on determining the presence and thickness of chat in these streams.
- MESL. 2010. *Advanced Screening-level Ecological Risk Assessment for Aquatic Habitants within the Tri-State Mining District Oklahoma, Kansas, Missouri, Draft Final October 2009, revised May 2010*. Tri-State Mining District (Missouri, Oklahoma, Kansas). May. This report evaluated risks to aquatic organisms associated with exposure to contaminated environmental media.
- USGS. 2009. *Selected Metals in Sediments and Streams in the Oklahoma Part of the Tri-State Mining District, 2000–2006*. Tri-State Mining District, Oklahoma. Lakebed, streambed, and floodplain sediment samples and surface water samples were collected between 2000 and 2006 from 30 sites in Oklahoma.
- Kirschner, F.E., AESE, Inc. 2008. *Site Characterization Report: Sediments, Surface Water, and Vegetation of Tar Creek, Lytle Creek, and Beaver Creek, Oklahoma*. TC, Lytle Creek, Beaver Creek Oklahoma. January. Sediment samples, along with plant and surface water samples, were collected from Fourmile Creek, Tar Creek, Lytle Creek, and Beaver Creek in 2005 and analyzed for metals.
- Cope, C.C., M.F. Becker, W.J. Andrews, and Kelli DeHay. 2008. *Streamflow, Water Quality, and Metal Loads from Chat Leachate and Mine Outflow into Tar Creek, Ottawa County, Oklahoma, 2005*. U.S. Geological Survey Scientific Investigations Report 2007-5115, 23 p. Prepared in cooperation with the U. S. Environmental Protection Agency. Streamflow and water quality samples collected to assess metal concentrations and loading to Tar Creek from tailings and mine discharge.
- EPA. 2016d. STORET; STORage and RETreival and Water Quality Exchange. December 2016. <https://www.epa.gov/waterdata/storage-and-retrieval-and-water-quality-exchange>. Data warehouse containing watershed surface water data.

The surface water data from the above reports and data sets were incorporated into the project database, and organized and catalogued in a manner to allow assignment of the data to each watershed. As a result of these efforts, data tables were produced that summarize the available data for each watershed, and for all watersheds combined (that is, the entire OU5 area). Tables 5-2a through 5-2g summarize the cadmium, lead and zinc analytical data for each watershed. Table 5-2h provides a

comprehensive summary of the cadmium, lead and zinc analytical data for the seven OU5 watersheds. Figure 5-2 shows the locations of all surface water samples collected within the OU5 watersheds and used to develop the data summary tables. The Cope, et al., 2008 data set identified above is slightly aged, meaning some of the data exceeds the 10-year historical data criterion that was part of the data usability assessment process. However, after evaluating this study, the analytical data and quality control methods employed were determined to be acceptable and therefore the data usable for the purposes of the HHRA and nature and extent evaluation.

5.2.3 Data Gap Assessment

As indicated by the surface water data summary tables, a significant amount of surface water data is usable for the HHRA and for the characterization of nature and extent of contamination. A data gap for surface water does not exist; however, spatially, additional surface water samples collected from the headwaters of Fourmile Creek and from Brush Creek (tributary to Lower Spring River) may benefit both the HHRA and nature and extent evaluations.

5.3 Mine Discharge

Mine discharge, as defined under the OU5 scope, consists of direct flow at the surface from underground sources most commonly consisting of the flooded underground mine voids and is often released as artesian flow through old exploratory bore holes and mine shafts. Mine discharge may flow over land or mine waste before reaching water. The flow can be both constant or intermittent and the volume and frequency of flow typically increase during periods of heavy rain and decrease during periods of drought.

Mine discharge occurs in approximately three different areas of the Tar Creek Superfund Site in Ottawa County, Oklahoma.

1. An area in Commerce, Oklahoma. This occurrence, shortly after the mines had refilled around 1979, led to the identification and eventual inclusion of the Tar Creek Superfund Site on the NPL. Mine discharges continue in that area today, with one discharge location being treated by a passive treatment system. This particular discharge location is included within the OU5 Tar Creek watershed area.
2. An area by East 40 Road, where Tar Creek and the old creek bed of Lytle Creek converge. This area is within the OU5 Tar Creek watershed area.
3. An area on Beaver Creek, immediately north and south of East 50 Road, within the OU5 Beaver Creek watershed area.

Figure 5-3 shows the approximate areas where mine discharges are known to occur and impact the Tar Creek and Beaver Creek watersheds.

Mine discharge from the three areas will be assessed for nature and extent of contamination at each area. Mine discharge from all three areas will be used collectively for evaluation in the HHRA because there is the potential for dermal contact exposures.

5.3.1 Data Requirements

Mine discharge will be evaluated for dermal contact and, therefore, will require unfiltered metal results for the HHRA. In addition, filtered results will be useful for evaluating the nature and extent of contamination. Data will be required from the three known discharge areas to adequately characterize the discharges for the nature and extent evaluation and HHRA.

5.3.2 Data Availability

Mine discharge has been previously studied and sampled (OWRB, 1983a), but current published literature was not identified.

An electronic data set, containing both surface water and mine discharge data, was provided by Dr. Robert Nairn of the University of Oklahoma. These data have been loaded into the project database. They were associated with either the Tar Creek or Beaver Creek watershed, depending on the discharge area. Table 5-3 summarizes analytical data for cadmium, lead, and zinc for samples from the Commerce area discharges and the Beaver Creek area discharges. Figure 5-3 shows the approximate locations where mine discharge is known to occur and data from two of these areas (Commerce area and Beaver Creek area) were used to prepare the data summary tables.

5.3.3 Data Gap Assessment

As indicated by the mine discharge data summary table, sufficient analytical data on the Commerce area and Beaver Creek area discharges exist for HHRA and determination of nature and extent of contamination in those areas. However, a HHRA a nature and extent data gap exists for the Tar Creek discharge area and must be addressed by the collection of mine discharge samples in the Tar Creek discharge area.

Because of the existing historical data that are usable for the nature and extent evaluation at two discharge areas, and future mine discharge samples will be collected to fill the HHRA data gaps and will also be used for the nature and extent evaluation, no additional data gaps were identified for characterization of nature and extent of contamination in mine discharge.

5.4 Aquatic Biota

The perennial flowing rivers and creeks of the OU5 study area support a wide variety of biota which may currently be, or in the past have been, exposed to metals in site sediments and surface water. Potentially exposed aquatic biota includes fish, shellfish, waterfowl, aquatic plants, amphibians, reptiles, and semi-aquatic mammals. The aquatic biota may be consumed by people living within or near OU5. The aquatic biota discussed below are based on the site CEM (Table 3-1), which was developed with extensive stakeholder input.

5.4.1 Fish

Fish from the seven OU5 watersheds will be assessed for nature and extent of contamination within each watershed. Fish data from all watersheds will be used collectively for evaluation in the HHRA.

Various species of fish living in rivers and creeks within the OU5 study area may be caught and prepared for consumption. Fish are often catalogued into gamefish and non-gamefish, and both will be evaluated for the HHRA and the RI. Fishing in this area is highly seasonal, where the various species of fish are often harvested during the spring spawn run and during the dry summer months, when the water in the pools are at their lowest (Harper et al., 2008). Previous studies completed by ODEQ (2003b and 2007) determined that increased levels of lead are present in fish collected from Tar Creek area mill ponds, the Spring River, the Neosho River, and Grand Lake O' The Cherokees. These data were used by the State of Oklahoma to support the issuance of a fish consumption advisory, based upon lead levels detected in fish, for the Tar Creek area including Grand Lake O' The Cherokees (ODEQ, 2010). The consumption advisory was issued based upon resident or non-residents, and provided suggestions based upon the type of fish for a suggested maximum number of meals per month one should consume.

Game fish are listed as largemouth (*Micropterus salmoides*), smallmouth (*Micropterus dolomieu*), and spotted bass (*Micropterus punctulatus*); black (*Pomoxis nigromaculatus*) and white (*Pomoxis annularis*) crappie; rainbow (*Oncorhynchus mykiss*) and brown (*Salmo trutta*) trout; sauger (*Sander canadensis*),

saugeye (*Stizostedion vitreum*) and walleye (*Sander vitreus*); white (*Morone chrysops*) and striped bass (*Morone saxatilis*); and blue (*Ictalurus furcatus*) and channel catfish (*Ictalurus punctatus*) (Oklahoma Department of Wildlife Conservation [ODWC], 2015). The species not listed are considered non-game fish (ODWC, 2015)

5.4.1.1 Data Requirements

Based on discussions with tribal stakeholders (CH2M, 2016a and 2016b), and as noted from Harper et al. (2008), fish are typically eviscerated prior to consumption. Fish may be prepared three ways prior to consumption. Specifically, the fish may be prepared as 1) filets only, 2) whole fish (eviscerated) with the head removed, or 3) head only (in soups). In general, this is consistent with how the ODEQ studies were conducted, and tribal stakeholder input influenced the framework of those studies. Based on this information, to evaluate direct ingestion of fish in the HHRA, metal analytical data are required for the following:

- Filets of both gamefish and non-gamefish;
- Whole eviscerated fish with heads removed, for both gamefish and non-gamefish;
- Heads of both gamefish and non-gamefish (heads will be obtained from the whole fish sample)

5.4.1.2 Data Availability

As noted above, two studies conducted by ODEQ (2003b and 2007) have been completed at the site. The electronic data for these reports were accessible through previous Tar Creek OU4 and OU5 databases; these are included in the OU5 database for this study. These data have been screened to identify sampling locations both within and outside of the OU5 study area. The locations are presented on Figure 5-4. Only the analytical data for samples collected within the OU5 study area will be used, and are flagged accordingly in the project database. Table 5-4 summarizes analytical data for cadmium, lead, and zinc for fish samples collected within the OU5 study area. This data set is slightly aged, meaning it exceeds the 10-year historical data criterion that was part of the data usability assessment process. However, after evaluating these studies, the analytical data and quality control methods employed were determined to be usable for the purposes of the OU5 HHRA and nature and extent evaluation. Also as noted below, additional fish tissue samples will be collected to provide updated concentrations for fish tissue.

A screening-level assessment of lead, cadmium, and zinc in fish was conducted in northeastern Oklahoma (Schmitt et al., 2006). The objective of this study was to evaluate potential human and ecological risks associated with metals in fish from mining in the TSMD. The Schmitt et al. study will be evaluated to determine if the presented data are usable.

Another study was conducted to assess the degree to which fish from the Oklahoma portion of the Spring River and Neosho River system are contaminated by lead, cadmium, and zinc through evaluation of fish blood sampling for biomonitoring (Brumbaugh et al., 2005). The Brumbaugh et. al study was considered and was concluded to be usable for background purposes only. Data Gap Assessment

As indicated by the fish data summary table, there is a limited amount of usable fish data for the HHRA and for the characterization of nature and extent of contamination due to insufficient spatial and watershed distribution, quantity of samples, and background (reference) samples. Both HHRA and nature and extent data gaps exist for all watersheds and must be addressed by the collection of additional samples.

5.4.2 Shellfish

Shellfish, specifically mussels, from the seven OU5 watersheds will be assessed for nature and extent of contamination within each watershed. Various types of taxa have been documented during surveys (Angelo et al., 2007). They are commonly located within suitable gravel bars within the rivers and creeks. Various species of mussels and clams may be collected and consumed from rivers and creeks within the

OU5 watershed. Shellfish data from all watersheds will be used collectively for evaluation in the HHRA. Crayfish data are also available from two USGS studies (USGS, 1997 and USGS, 2006); although the information contained therein is considered too dated for current use, these studies will be considered background information for the HHRA.

Asian clams, *Corbicula fluminea*, are distributed widely in the OU5 watersheds, attain a greater abundance than mussels in most stream reaches, and occur in some contaminated water bodies lacking other mussel populations (Angelo et al., 2007). Asian clams are a small, light-colored bivalve with a shell that is ornamented by concentric grooves (USGS, 2016a). The Asian clam is widely spread throughout the world and is considered an invasive species. It is a filter feeder that removes particles from the water column and it can be found at the sediment surface or slightly buried. The Asian clam has the ability to reproduce rapidly.

5.4.2.1 Data Requirements

According to tribal stakeholders, mussels and Asian clams are collected and consumed by some Tribal members and citizens, and they are found within the OU5 watersheds (CH2M, 2016a and 2016b). Thus, mussel analytical data, specifically metal analysis of mussel meat/tissue, is needed for evaluating consumption in the HHRA. These data will also be used to characterize the nature and extent of contamination.

5.4.2.2 Data Availability

As part of a species survey, 34 different species of mussels and clams were observed, and of these, tissue samples were collected from 17 species for analytical testing (Angelo et al., 2007). The study observed and concluded that metal accumulation levels in mussels and Asian clams correlate strongly, and suggested that Asian clams be considered as a possible surrogate for mussels (Angelo et al., 2007). Collection of Asian clams as a surrogate for mussels would also relieve unnecessary stress on native species populations (Angelo et al., 2007). This approach was also supported by tribal stakeholders and their consultant during planning meetings (CH2M, 2016a and 2016b).

Electronic data were provided by one of the report authors, Robert T. Angelo with KDHE. Mussel and clam tissue data from this report were incorporated into the project database, and organized and catalogued by species to allow assignment of the data to each watershed within and outside of the OU5 study area. Only the data for samples collected within the OU5 study area will be used in the HHRA and nature and extent evaluation. As a result of this effort, Table 5-5 was produced, summarizing the available data for the OU5 study area. Figure 5-5 identifies the locations of all the mussel/Asian clam sampling locations within and outside of the OU5 watersheds.

5.4.2.3 Data Gap Assessment

As indicated by the mussel/Asian clam data summary table, there is a limited amount of usable mussel/Asian clam data for the HHRA and for the characterization of nature and extent of contamination due to insufficient spatial and watershed distribution, quantity of samples, and background (reference) samples. HHRA and nature and extent data gaps exist for all watersheds and must be addressed by the collection of additional samples.

5.4.3 Waterfowl

Various species of waterfowl are present in OU5 watersheds. Many of these waterfowl species use the local rivers, creeks, and ponds during migration, making it an important migration corridor. Migratory waterfowl are present in their largest numbers in late fall and early winter (Harper et al., 2008). Many of these species are hunted and harvested for human consumption. The migratory nature of waterfowl will make it difficult to link metal concentrations in duck breast, if any, to specific surface water and sediment concentrations in OU5. However, at the request of the tribal stakeholders, consumption of ducks will be assessed in the HHRA to represent waterfowl consumed in OU5.

5.4.3.1 Data Requirements

Ducks are commonly found within the OU5 watersheds, and only the duck breast tissue/meat is consumed according to tribal stakeholders (CH2M, 2016a and 2016b). Therefore, duck analytical data, specifically metal analysis of duck breast meat/tissue, are needed for evaluating consumption in the HHRA and determining nature and extent of contamination.

5.4.3.2 Data Availability

Site-specific analytical data for metals in the breast meat/tissue of ducks do not exist, nor was this type of data identified for a comparable site.

5.4.3.3 Data Gap Assessment

Site-specific analytical data for breast meat/tissue of ducks do not exist but are needed for the HHRA. However, as noted in CEM (Section 3.3 and Table 3-1) evaluation of duck breast meat/tissue direct ingestion will be qualitatively evaluated in the HHRA instead of quantitatively evaluated and therefore analytical data is not required. The approach to duck evaluation may change pending ongoing project discussions related to opportunistic sample collection of duck breast meat/tissue.

5.4.4 Aquatic Plants

Aquatic plants are present in the OU5 watersheds and are used for food and medicinal purposes by some Tribal members and citizens. Tribal consensus was reached on two commonly used aquatic plants: arrowhead root and duckweed. The two aquatic plants from the seven OU5 watersheds will be assessed for nature and extent of contamination within each watershed, and the aquatic plant data (for these two plants) from all watersheds will be used collectively for evaluation in the HHRA.

The arrowhead root plant (*Sagittaria rigida*) is a horizontal creeper and is most recognizable by its arrowhead-shaped leaves and potato-like tubers. The arrowhead plant is most commonly found in swamps, ditches, ponds, and shallow waters (Harper et al., 2008). The arrowhead plant flowers in the summer with three-petaled white blossoms, which are arranged in threes. The seeds normally ripen between August and September. The arrowhead tubers are egg shaped and range from 1 to 2 inches in length (USDA and NRCS, 2016). The arrowhead root may be consumed much like a potato, and also used for medicinal purposes (TEMS, 2014).

Duckweed (*Lemna minor*) grows floating in still or slow-moving fresh water, which contains a high supply of mineral nutrients. The duckweed is made up of one or multiple frond chains with one mother root per frond. This mother root decays shortly after the frond is formed, and the duckweed will continue to float in water. The duckweed plant has a flattened, oval-shaped plant body, and is typically less than 1 millimeter in length (USDA and NRCS, 2016). Duckweed may be collected and prepared for consumption in soups and eaten raw in salads (TEMS, 2014).

5.4.4.1 Data Requirements

Based on discussions with the tribal stakeholders, it was confirmed that the entire duckweed plant may be used or consumed, and the duckweed is washed or rinsed with water before consumption (CH2M, 2016a and 2016b). Thus, duckweed analytical data, specifically metal analysis of the entire washed duckweed plant, are needed for evaluating consumption in the HHRA. These data will also be used to characterize the nature and extent of contamination.

Based on discussions with the tribal stakeholders, it was confirmed that the entire arrowhead root plant is used, but that portions of the plant are used differently. Tribal members and citizens indicated that they use the arrowhead root plant in three ways: 1) consumption of the washed tuber only, 2) medicinal consumption or dermal application of the washed fine roots only, and 3) tea consumption from the washed leaves only (CH2M, 2016b). In consideration of this, arrowhead root analytical data, specifically metal analysis of three portions of the plant (the upper leaf/stem, the tuber, and the fine roots), is

required for evaluating consumption in the HHRA. These data will also be used to characterize the nature and extent of contamination.

5.4.4.2 Data Availability

Plants within the TSMD have been previously studied (Kirchner, 2008; TEMS, 2014) but often the plants collected were from the terrestrial environment and not from the aquatic environment; or, if they were collected in the aquatic environment, they may not have been for duckweed or arrowhead root. However, the TEMS 2014 report has analytical data that is useable for the OU5 scope for duckweed and arrowhead root plants.

Electronic data for the TEMS 2014 report were provided by the report authors (Ean M. Garvin, Meredith S. Garvin, and Cas F. Bridge) and the sponsors of this work, the Six Treaty Tribes of Oklahoma. Plant data from this report were incorporated into the project database, and organized and catalogued by species to allow assignment of the data to each watershed within and outside of the OU5 study area. Only the data for duckweed and arrowhead root samples collected within the OU5 study area will be used in the HHRA and nature and extent evaluation. As a result of this effort, Table 5-6 was produced that summarizes the available cadmium, lead, and zinc data for the OU5 study area. One duckweed sample is designated as a background (reference) sample location because of the location being upstream of Elm Creek on the Neosho River. Figure 5-6 identifies the locations of all duckweed and arrowhead root sampling locations within and outside of the OU5 study area.

5.4.4.3 Data Gap Assessment

A data gap exists for aquatic plants, and duckweed and arrowhead were selected as representative plant species. As indicated by the aquatic plant summary table, there is a limited amount of usable duckweed and arrowhead root data for the HHRA and for the characterization of nature and extent of contamination due to insufficient spatial and watershed distribution, quantity of samples, and small number of reference (background) samples (that is, only one duckweed and no arrowhead root).

The existing duckweed and arrowhead root data will be used, but the arrowhead root data does not fully address the three plant parts needed for the HHRA. HHRA data gaps exist for duckweed and arrowhead root in all watersheds and must be addressed by the collection of additional samples.

Because of the existing historical data that are usable for the HHRA and nature and extent evaluation, and future aquatic plant samples will be collected to fill the HHRA data gaps and will also be used for the nature and extent evaluation, no additional data gaps were identified for characterization of nature and extent of contamination in aquatic plants.

5.4.5 Aquatic Amphibians and Reptiles

Aquatic amphibians and reptiles are present in the OU5 watersheds. Tribal member and citizens consume both frogs and turtles. The bullfrog (*Lithobates catesbeianus* or *Rana catesbeiana*) was selected as a representative species for sampling. Bullfrogs are found living on the banks of rivers and creeks within the OU5 study area and may be caught and prepared for consumption. Bullfrogs from all watersheds will be used collectively for evaluation in the HHRA.

The bullfrog is native to eastern North America. Its natural range extends from the Atlantic Coast to as far west as Oklahoma and Kansas. The bullfrog has an olive green back and sides that are blotched with brownish markings and a whitish belly spotted with yellow or grey. The upper lip is often bright green, and males have yellow throats. Bullfrogs inhabit large, permanent water bodies, such as swamps, ponds, and lakes, where they are usually found along the water's edge. (iNaturalist, 2016a).

The bullfrog provides a food source, especially in the Southern and some areas of the Midwestern United States. A traditional way of hunting bullfrogs is to paddle or pole silently by canoe or flatboat in

ponds or swamps at night. When a frog's call is heard, a light is shone at the frog, temporarily inhibiting its movement. The only parts normally eaten are the rear legs (iNaturalist, 2016a).

5.4.5.1 Data Requirements

According to tribal stakeholders, only the rear (hind) legs of a frog are consumed, and they are commonly collected during the later months of the summer season (CH2M, 2016a and 2016b). Therefore, frog analytical data, specifically metal analysis of bullfrog hind leg meat/tissue, are needed for evaluating consumption in the HHRA.

5.4.5.2 Data Availability

Site-specific analytical data for metals in the meat/tissue from the hind legs of bullfrogs do not exist, nor was this type of data identified for a comparable site.

5.4.5.3 Data Gap Assessment

Site-specific analytical data for hind leg meat of bullfrogs do not exist but are needed for the HHRA. Therefore, HHRA data gaps exist and must be addressed by the collection of bullfrog hind leg meat samples.

5.4.6 Semi-Aquatic Mammals

Semi-aquatic mammals are present in the OU5 watersheds. Tribal members and citizens consume beaver, muskrat, and raccoon. Tribal consensus was reached on one representative semi-aquatic mammal: the raccoon (*procyon lotor*). Raccoons from all watersheds will be used collectively for evaluation in the HHRA.

Raccoons are opportunistic and adaptable, so their habitat is all of Oklahoma. Raccoons tend to be located in areas with food, water, and a suitable den site. The raccoon is a medium-sized mammal native to North America. The raccoon typically has a body length of 40 to 70 centimeters (16 to 28 inches) and a body weight of 3.5 to 9 kilograms (8 to 20 pounds). The home range sizes vary from 3 hectares (7.4 acres) for females in cities, to 5,000 hectares (12,000 acres) for males in prairies. While population densities range from 0.5 to 3.2 animals per square kilometer (1.3 to 8.3 animals per square mile) in prairies and do not usually exceed 6 animals per square kilometer (15.5 animals per square mile) in upland hardwood forests, more than 20 raccoons per square kilometer (51.8 animals per square mile) can live in lowland forests and marshes. Although they have thrived in sparsely wooded areas in the last decades, raccoons depend on vertical structures to climb when they feel threatened and, therefore, avoid open terrain. While primarily hunted for their fur, raccoons were also a source of food for Native Americans and early American settlers (iNaturalist, 2016b).

Raccoons eat hundreds of species of plants and animals, although plants are considered the most important component of the raccoon's diet in most habitats. In the spring, however, raccoons tend to feed more on animals, including crayfish and insects, than plants. Raccoons typically eat 0.5 to 1 pound of food per day, and up to 5 pounds as winter approaches. The diet of the omnivorous raccoon, which is usually nocturnal, consists of about 40 percent invertebrates, 33 percent plant foods, and 27 percent vertebrates (iNaturalist, 2016b).

5.4.6.1 Data Requirements

Tribal stakeholders indicated that the meat portion of the raccoon is the only portion prepared for consumption, and that due to the presence of parasites, internal organs are not consumed (CH2M, 2016a and 2016b). Therefore, raccoon analytical data, specifically metal analysis of raccoon meat/tissue are needed for evaluating consumption in the HHRA.

5.4.6.2 Data Availability

Site-specific analytical data for metals in the meat/tissue of raccoons do not exist, nor was this type of data identified for a comparable site.

5.4.6.3 Data Gap Assessment

Site-specific analytical data for raccoon meat/tissue do not exist but are needed for the HHRA. Therefore, HHRA data gaps exist and must be addressed by the collection of raccoon meat/tissue samples.

5.5 Other Data Requirements

5.5.1 Hydrology Monitoring

The USGS has developed a network of stream gauges for the purpose of the National Streamflow Information Program. A streamgage is an active, continuously functioning measuring device in the field, for which a mean daily streamflow is computed or estimated and quality assured for at least 355 days of a water year or a complete set of unit values are computed or estimated and quality assured for at least 355 days of water year (USGS, 2014). All USGS stream gauges in the region are shown on Figure 2-1.

The combination of main channel and tributary flow data and water quality data will allow estimation of the relative contributions of each source by mass flux. Flow data changes over time may be correlated with water quality changes, helping to identify potential changes in water quality with flow rate and identification of contributions from key tributaries or main channel sediment. In general, the flow data provide a greater opportunity to identify and prioritize the source(s) where treatment/removal options should be focused to improve the overall water quality of the system.

5.5.2 Co-Located Sediment and Surface Water Samples

Future surface water and sediment samples will be collected at locations that are co-located with fish, Asian clam, and aquatic plant samples, with these surface water and sediment samples supplementing the existing surface water and sediment data. The co-located surface water and sediment samples will be used to prepare a correlation analysis between the biota analytical results and the surface water and sediment results. Collection of co-located surface water and sediment samples is also consistent with historical biota studies.

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Data Gap Summary

The following subsections summarize known data gaps for each exposure medium. Complete sampling program details including proposed locations, sample quantities, analytical parameters, type of samples and data quality objectives (DQOs) will be presented in the field sampling plan (FSP) and quality assurance project plan (QAPP) which will be prepared with stakeholder input.

6.1 Sediment

Data gaps exist for sediments for use in the HHRA evaluation in Fourmile Creek, Elm Creek, and Lost Creek, and these gaps must be addressed by a sample collection program. The available sediment data is sufficient for nature and extent but will be supplemented with the additional samples collected for the HHRA.

The future biota data gap collection efforts will include the collection of co-located sediment samples where fish, Asian clam, and aquatic plant samples are collected. The co-located sediment data will supplement the existing sediment data and address the sediment data gaps in these three watersheds. However, if collection of fish, Asian clam, and plant samples in these three watersheds is not completed due to the absence of these specific biota in these watersheds, or the biota collection locations do not address spatial data needs, then additional (non-co-located) sediment samples will be collected to address the HHRA sediment data needs.

6.2 Surface Water

Neither a HHRA or nature and extent data gaps exist for surface water; however, spatially, additional surface water samples collected from the headwaters of Fourmile Creek and from Brush Creek (tributary to Lower Spring River) may benefit both the HHRA and nature and extent evaluations.

While a surface water data gap doesn't exist, the future biota sample collection efforts will include the collection of co-located surface water samples where fish, Asian clam, and aquatic plant samples are collected. The co-located surface water data will supplement the existing surface water data. However, if collection of fish, Asian clam, and plant samples in these three watersheds is not completed due to the absence of these specific biota in these watersheds, or the biota collection locations do not address spatial data needs, then additional (non-co-located) surface water samples will be collected.

6.3 Mine Discharge

HHRA and nature and extent data gaps exist for the Tar Creek discharge area and these gaps must be addressed by a sample collection program. These will be discrete samples of flowing mine discharge from mine discharges that may be accessible to humans to evaluate dermal contact, and also discharges flowing into Tar Creek to evaluate surface water impacts.

Mine discharge data is sufficient for HHRA and determination of nature and extent for the Commerce area discharge (in the Tar Creek watershed) and the Beaver Creek discharge area (in the Beaver Creek watershed)

6.4 Aquatic Biota

The following subsections summarize data gaps for aquatic biota. It should be noted that permits may be required for the collection of aquatic biota samples for scientific purposes. Permit requirements, if any, will be determined during preparation of site plans and accommodated before collection is initiated.

6.4.1 Fish

Data gaps exist for fish in all watersheds and these gaps must be addressed through a sample collection program. Specifically, metal analytical data for both game and non-game fish is required for all three types of samples (filet; whole-eviscerated, head removed; and head only), to meet the data requirements for the HHRA and RI.

6.4.2 Shellfish

Data gaps exist for Asian clams in all watersheds and these gaps must be addressed through a sample collection program. Specifically, metal analytical data for Asian clam tissue is needed to meet the data requirements for the HHRA and RI.

6.4.3 Waterfowl

Waterfowl (ducks) are to be addressed qualitatively utilizing historical work completed at the Couer d'Alene site. As such, a data gap does not exist under this current approach to evaluating waterfowl. However, an opportunistic sampling event for duck tissue is currently being considered, and if these samples are obtained, then results would be evaluated in the HHRA.

6.4.4 Aquatic Plants

Data gaps exist for duckweed and arrowhead root in all watersheds and these gaps must be addressed by a sample collection program. Specifically, metal analytical data for duckweed and all three types of arrowhead root samples (tuber only, fine roots only, and upper stem/leaves) is needed to meet the data requirements for the HHRA and RI.

6.4.5 Aquatic Amphibians

A data gap exists for bullfrogs in all watersheds and this gap must be addressed by a sample collection program. Specifically, metal analytical data for bullfrog hind leg meat is needed to meet the data requirements for the HHRA and RI.

6.4.6 Semi-Aquatic Mammals

A data gap exists for raccoons and this gap must be addressed by a sample collection program. Specifically, metal analytical data for raccoon meat is needed to meet the data requirements for the HHRA and RI.

6.5 Proposed Analytical Program

It is recommended that all media be analyzed for the Target Analyte List metals.

It is recommended that surface water and mine discharge samples be analyzed for general chemistry parameters. The general chemistry parameters for surface water and mine discharge samples will serve two purposes:

- To provide a chemical signature for each discharge water to site rivers and creeks
- To provide chemical data for modeling reactions that would occur during mixing, and for future evaluation of potential treatment technologies

The first purpose allows chemistry to be used to estimate proportions of mixing that are occurring along any given reach of a river or creek, and to identify specific source water inflows. The second purpose is to predict mineral precipitation and trace metal adsorption during mixing of different source waters, and the effectiveness of applying treatment technologies, such as pH buffering, or addition of adsorbent materials. Major ion chemistry, combined with field parameters and trace metal data, are required to enable utilization of these tools.

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Tables

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Table 2-1. Summary of USGS Surface Water Gages
Tar Creek Superfund Site Operable Unit 5 Remedial Investigation
Ottawa County, Oklahoma

USGS Station Name	USGS Station Number	Drainage Area ^a (mi ²)	Period of Record		Period of Record Statistics Based on Water Year			
			Begin Date	End Date	Annual Mean (ft ³ /sec)	Median (ft ³ /sec)	Annual 7-day Minimum (ft ³ /sec)	Water Year Range
Neosho River near Commerce, OK ^b	07185000	5,926	10/1/1939	Ongoing	3,794	928	0.0	1940 - 2015
Spring River near Quapaw, OK	07188000	2,516	10/1/1939	Ongoing	2,212	848	7.26	1940 - 2015
Tar Creek at Miami, OK	07185100	52.0	8/14/1980	1/10/1984	36.9	7.1	0.18	1981 - 1983
Tar Creek at 22 nd Street Bridge at Miami, OK	07185095	44.7	1/11/1984	Ongoing	58.5	8.9	0.0	1985 - 2015
Tar Creek near Commerce, OK	07185090	34.4	7/21/2004	Ongoing	36.4	5.4	0.0	2005 - 2015
Beaver Creek above Spring River near Quapaw, OK	07188007	6.3	7/14/2004	9/30/2006	4.25	0.72	0.09	2004 - 2006

Source: USGS, 2016a

^a Contributory drainage area to the gage

^b Flow regulated, to some extent, since 1963 by John Redmond Reservoir in Kansas, 190 miles upstream

ft³/sec = cubic feet per second

mi² = square miles

OK = Oklahoma

USGS = U.S. Geological Survey

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Table 2-2. Summary of Basin Characteristics and Peak Flow Statistics for Ungaged Sites on Tributary Basins to the Neosho and Spring Rivers^a
Tar Creek Superfund Site Operable Unit 5 Remedial Investigation
Ottawa County, Oklahoma

Tributary Basin	Receiving Water Basin	Drainage Area (mi ²)	Stream Slope ^b (ft/ft)	Mean Annual Precipitation (in)	Peak Flood (ft ³ /sec) ^c						
					2-year	5-year	10-year	25-year	50-year	100-year	500-year
Lost Creek	Neosho River	91.27	0.0031	44.7	4,940	9,400	13,600	20,400	25,200	30,000	43,800
Tar Creek	Neosho River	52.77	0.0012	45.5	3,050	5,590	7,890	11,600	14,600	17,400	25,900
Fourmile Creek	Neosho River	28.97	0.0011	44.9	1,970	3,630	5,120	7,530	9,500	11,400	17,200
Elm Creek	Neosho River	22.82	0.0012	45.2	1,750	3,220	4,550	6,700	8,410	10,100	15,300
Beaver Creek	Spring River	6.49	0.0041	45.7	941	1,790	2,580	3,890	4,760	5,800	8,610

^a Data derived using the USGS StreamStats Version 3.0 program (USGS, 2016b)

^b Computed by the USGS StreamStats Version 3.0 program using the "10 and 85 Method," which is the change in elevation between points 10- and 85-percent of the length along the main channel to the basin divide, divided by the length between points

^c Prediction errors (± percent) associated with the respective peak-flood values are: 2-year = 46.7; 5-year = 35.1; 10-year = 31.8; 25-year = 34.7; 50-year = 34.0; 100-year = 35.7; and, 500-year = 43.4 percent.

ft³/sec = cubic feet per second

ft/ft = foot per foot

in = inch

mi² = square miles

USGS = U.S. Geological Survey

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Table 3-1. Conceptual Exposure Model
Tar Creek Superfund Site Operable Unit 5 Remedial Investigation
Ottawa County, Oklahoma

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway	Data Need
Current/ Future	Aquatic Biota	Fish	Fish in rivers and creeks	Tribal Members/ General Public	Adult/Child	Ingestion	Quantitative	Fish may be caught and consumed from rivers and creeks	Gamefish and non-gamefish; whole (no head, eviscerated), head only, and fillet
		Shellfish	Shellfish in rivers and creeks	Tribal Members		Ingestion		Shellfish (mussels and crawfish) may be collected and consumed from rivers and creeks	Asian clams (surrogate species)
		Waterfowl	Waterfowl on rivers and creeks	Tribal Members/ General Public		Ingestion	Qualitative	Waterfowl (ducks and geese) may be caught and consumed from rivers and creeks	Duck breast meat
		Aquatic Plants	Aquatic plants growing in the wet bank-to-bank section of perennial flowing rivers and creeks	Tribal Members		Ingestion (both plant types), dermal contact (arrowhead root only)	Quantitative	Aquatic plants may be collected from saturated sediments and surface water of perennial rivers and creeks for food or medicinal purposes	Two plant types (duckweed and arrowhead root); duckweed = washed whole plant; arrowhead = washed tuber only, washed fine roots only, and washed leaves/stalk only
		Turtles, Frogs	Aquatic amphibians and reptiles living in the wet bank-to-bank section of perennial flowing rivers and creeks	Tribal Members		Ingestion		Turtles and frogs may be caught and consumed from rivers and creeks	Bullfrog rear leg meat
		Aquatic Mammals (Raccoon, Beaver, Mink, Muskrat, Otter)	Aquatic mammals living in the wet bank-to-bank section of perennial flowing rivers and creeks	Tribal Members		Ingestion		Aquatic mammals may be caught and consumed from rivers and creeks	Raccoon meat
	Sediment	Sediment	Sediment (0 to 1 foot deep) from saturated zones of perennial rivers or creeks	Tribal Members/ General Public		Incidental ingestion and dermal contact		Surface sediment may be contacted during recreational activities (swimming, wading, fishing, hunting)	Sieved or unsieved surface sediment; 0 to 1 foot interval (within that range)
	Surface water	Surface Water	Surface water in rivers and creeks	Tribal Members/ General Public		Ingestion and dermal contact		Surface water may be used as a potable source and may be contacted during recreational use (swimming, wading, fishing, hunting)	Unfiltered surface water data from human use areas
			Surface water in rivers and creeks	Tribal Members		Ingestion and dermal contact		Surface water is used in sweat lodges	Unfiltered surface water data
			Mine discharge	Tribal Members/ General Public		Dermal contact		People may contact mine pool discharges	Unfiltered surface water data from mine pool discharge areas

Note: Terrestrial small game (birds, rabbits) and large game (deer, elk) were addressed under Operable Unit 4 (Source Material, Transition Zone Soil, Rural Residential Yards and Wells)

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Table 4-1. Summary of Historical Analytical Data Sets
Tar Creek Superfund Site Operable Unit 5 Remedial Investigation
Ottawa County, Oklahoma

Resource Number	Resource Title	Primary Author	Resource Date	Media	Data Loaded In Database
1	Reconnaissance Assessment of Heavy Metals in the Clay Fraction of Sediments Downstream of the Tar Creek Superfund Site in Northeastern Oklahoma	Tribal Environmental Management Services, LLC (TEMS)	April 2012	Sediment	Not Obtained
2	Analysis of Heavy Metals (Pb, Zn, Cd) in Culturally Significant Plants Within the Grand Lake Watershed of Northeastern Oklahoma	Tribal Environmental Management Services, LLC (TEMS)	September 2014	Biota/Plants and Sediment and Surface Water	Yes
3	Advanced Screening-level Ecological Risk Assessment for Aquatic habitats within the Tri-State Mining District Oklahoma, Kansas, Missouri, Draft Final October 2009, revised May 2010	MacDonald (MESL), USGS, CH2M	May 2010	Sediment and Surface Water	Yes
4	Integrated Site Assessment/Investigation Version 2.0, Tar Creek OU5, Ottawa County, Oklahoma	CH2M	March 2012	Sediment and Surface Water	Yes
5	Residual effects of lead and zinc mining on freshwater mussels in the Spring River Basin (Kansas, Missouri, and Oklahoma, USA). Science of the Total Environment 384-467-496	Elsevier, B.V.	2007	Biota/Mussels	Yes
6	Streamflow, water quality, and metal loads from chat leachate and mine outflow into Tar Creek, Ottawa county Oklahoma, 2005 (SIR 2007-5115)	USGS	2005	Surface Water	Yes
7	Sources and fates of heavy metals in a mining-impacted stream: Temporal variability and the role of iron oxides	Laurel A. Schaider, David B. Senn	June 2014	Surface Water	Not Obtained
8	Fish Tissue Metals Analysis in the Tri-State Mining Area, Final Report	ODEQ	2003	Biota/Fish	Yes
9	Fish Tissue Metals Analysis in the Tri-State Mining Area Follow-up Study, Final Report	ODEQ	2007	Biota/Fish	Yes
10	Selected Metals in Sediments and Streams in the Oklahoma Part of the Tri-State Mining District, 2000–2006 (SIR 2009-5032)	USGS	2009	Sediment and Surface Water	Yes
11	Assessment of Contaminated Streambed Sediment in the Kansas Part of the Historic Tri-State Lead and Zinc Mining District, Cherokee County, 2004 (SIR 2005-5251)	USGS	2005	Sediment and Surface Water	Yes
12	Site Characterization Report: Sediments, Surface Water, and Vegetation of Tar Creek, Lytle Creek, and Beaver Creek, Oklahoma	F.E. Kirschner, AESE, Inc.	January 2008	Sediment and Surface Water	Yes
13	STORage and RETrival (STORET) Electronic Data Management System and Data Warehouse	EPA	May 2016	Surface Water	Yes
14	Supplemental Sampling at OU 04; Treece Subsite, Cherokee County, Kansas, in Support of RD for OU 04 Treece Phase IIIA	EPA Region 7	2015	Sediment	Yes
15	Oklahoma University Analytical Data Set	Dr. Robert W. Nairn, PhD University of Oklahoma Norman, OK	2016	Surface Water and Mine Discharge	Yes

Cd = cadmium
CH2M = CH2M HILL, Inc.
EPA = U.S. Environmental Protection Agency
KS = Kansas
OU = Operable Unit
Pb = lead
RD = remedial design
ODEQ = Oklahoma Department of Environmental Quality
USA = United States of America
USGS = U.S. Geological Survey
Zn = zinc

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Table 5-1a. Sediment Sample Data Summary - Four Mile Creek Watershed*Tar Creek Superfund Site Operable Unit 5 Remedial Investigation**Ottawa County, Oklahoma*

Analyte	Unit	Number of Samples	Number of Detects	Number of Nondetects	Minimum Detect	Average Detect	Maximum Detect
Useable for Nature and Extent Only							
Cadmium	mg/kg	22	20	2	0.23	0.6203	2.08
Lead	mg/kg	22	22	0	15.5	27.08	41.5
Zinc	mg/kg	22	22	0	70	137.7	442

mg/kg = milligrams per kilogram

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Table 5-1b. Sediment Sample Data Summary - Elm Creek Watershed*Tar Creek Superfund Site Operable Unit 5 Remedial Investigation**Ottawa County, Oklahoma*

Analyte	Unit	Number of Samples	Number of Detects	Number of Nondetects	Minimum Detect	Average Detect	Maximum Detect
Useable for Nature and Extent Only							
Cadmium	mg/kg	34	34	0	1.1	71.68	645
Lead	mg/kg	34	34	0	32.6	3631	40400
Zinc	mg/kg	34	34	0	695	15440	126000

mg/kg = milligrams per kilogram

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Table 5-1c. Sediment Sample Data Summary - Tar Creek Watershed (including Lytle Creek)*Tar Creek Superfund Site Operable Unit 5 Remedial Investigation**Ottawa County, Oklahoma*

Analyte	Unit	Number of Samples	Number of Detects	Number of Nondetects	Minimum Detect	Average Detect	Maximum Detect
Useable for Nature and Extent Only							
Cadmium	mg/kg	191	188	3	0.33	100.9	4170
Lead	mg/kg	191	191	0	15.4	827.7	7280
Zinc	mg/kg	191	191	0	81	12200	159000
Useable for Human Health Risk Assessment*							
Cadmium	mg/kg	36	36	0	1	27.63	177
Lead	mg/kg	36	36	0	14.5	328.7	1900
Zinc	mg/kg	36	36	0	75.2	3848	30200

* All data cleared for usability in the Human Health Risk Assessment will also be used in the Nature and Extent evaluation.

mg/kg = milligrams per kilogram

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Table 5-1d. Sediment Sample Data Summary - Neosho River Watershed*Tar Creek Superfund Site Operable Unit 5 Remedial Investigation**Ottawa County, Oklahoma*

Analyte	Unit	Number of Samples	Number of Detects	Number of Nondetects	Minimum Detect	Average Detect	Maximum Detect
Useable for Nature and Extent Only							
Cadmium	mg/kg	62	7	55	1.03	2.776	6.2
Lead	mg/kg	62	62	0	11.7	30.11	104
Zinc	mg/kg	62	62	0	45.1	397.3	1750
Useable for Human Health Risk Assessment*							
Cadmium	mg/kg	21	0	21	--	--	--
Lead	mg/kg	21	7	14	10	12.14	15
Zinc	mg/kg	21	21	0	16	108.7	953

* All data cleared for usability in the Human Health Risk Assessment will also be used in the Nature and Extent evaluation.

-- = no values for minimum, average, and maximum concentrations because all values were not detected.

mg/kg = milligrams per kilogram

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Table 5-1e. Sediment Sample Data Summary - Beaver Creek Watershed*Tar Creek Superfund Site Operable Unit 5 Remedial Investigation**Ottawa County, Oklahoma*

Analyte	Unit	Number of Samples	Number of Detects	Number of Nondetects	Minimum Detect	Average Detect	Maximum Detect
Useable for Nature and Extent Only							
Cadmium	mg/kg	35	33	2	1.1	45.1	545
Lead	mg/kg	35	35	0	11.4	188.3	877
Zinc	mg/kg	35	35	0	20.6	5728	88400
Useable for Human Health Risk Assessment*							
Cadmium	mg/kg	6	5	1	1	1.8	3
Lead	mg/kg	6	6	0	13	29	41
Zinc	mg/kg	6	6	0	140	523.3	710

* All data cleared for usability in the Human Health Risk Assessment will also be used in the Nature and Extent evaluation.

mg/kg = milligrams per kilogram

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Table 5-1f. Sediment Sample Data Summary - Lost Creek Watershed*Tar Creek Superfund Site Operable Unit 5 Remedial Investigation**Ottawa County, Oklahoma*

Analyte	Unit	Number of Samples	Number of Detects	Number of Nondetects	Minimum Detect	Average Detect	Maximum Detect
Useable for Nature and Extent Only							
Cadmium	mg/kg	36	24	12	0.3	5.728	37.5
Lead	mg/kg	36	36	0	6	164.4	1520
Zinc	mg/kg	36	36	0	28.3	590.8	4730

mg/kg = milligrams per kilogram

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Table 5-1g. Sediment Sample Data Summary - Lower Spring River Watershed*Tar Creek Superfund Site Operable Unit 5 Remedial Investigation**Ottawa County, Oklahoma*

Analyte	Unit	Number of Samples	Number of Detects	Number of Nondetects	Minimum Detect	Average Detect	Maximum Detect
Useable for Nature and Extent Only							
Cadmium	mg/kg	96	91	5	0.49	13.31	180
Lead	mg/kg	101	101	0	7.7	139.7	1060
Zinc	mg/kg	101	101	0	56.8	1761	16000
Useable for Human Health Risk Assessment*							
Cadmium	mg/kg	9	9	0	3	4.444	6
Lead	mg/kg	9	9	0	23	39.11	55
Zinc	mg/kg	9	9	0	507	674	860

* All data cleared for usability in the Human Health Risk Assessment will also be used in the Nature and Extent evaluation.

mg/kg = milligrams per kilogram

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Table 5-1h. Sediment Sample Data Summary - All Watersheds*Tar Creek Superfund Site Operable Unit 5 Remedial Investigation**Ottawa County, Oklahoma*

Analyte	Unit	Number of Samples	Number of Detects	Number of Nondetects	Minimum Detect	Average Detect	Maximum Detect
Useable for Nature and Extent Only							
Cadmium	mg/kg	476	397	79	0.23	61.12	4170
Lead	mg/kg	481	481	0	6	645.8	40400
Zinc	mg/kg	481	481	0	20.6	6826	159000
Useable for Human Health Risk Assessment*							
Cadmium	mg/kg	72	50	22	1	20.88	177
Lead	mg/kg	72	58	14	10	214.6	1900
Zinc	mg/kg	72	72	0	16	2084	30200

* All data cleared for usability in the Human Health Risk Assessment will also be used in the Nature and Extent evaluation.

mg/kg = milligrams per kilogram

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Table 5-2a. Surface Water Sample Data Summary - Four Mile Creek Watershed*Tar Creek Superfund Site Operable Unit 5 Remedial Investigation**Ottawa County, Oklahoma*

Analyte	Unit	Number of Samples	Number of Detects	Number of Nondetects	Minimum Detect	Average Detect	Maximum Detect
Useable for Nature and Extent Only							
Cadmium	mg/kg	46	2	44	0.2	0.5	0.8
Lead	mg/kg	46	10	36	0.2	2.82	9
Zinc	mg/kg	45	35	10	6	16.43	47
Useable for Human Health Risk Assessment*							
Cadmium	mg/kg	25	1	24	0.6	0.6	0.6
Lead	mg/kg	25	17	8	0.8	1.188	2.4
Zinc	mg/kg	25	8	17	10	12.5	20

* All data cleared for usability in the Human Health Risk Assessment will also be used in the Nature and Extent evaluation.

µg/L = micrograms per liter

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Table 5-2b. Surface Water Sample Data Summary - Elm Creek Watershed*Tar Creek Superfund Site Operable Unit 5 Remedial Investigation**Ottawa County, Oklahoma*

Analyte	Unit	Number of Samples	Number of Detects	Number of Nondetects	Minimum Detect	Average Detect	Maximum Detect
Useable for Nature and Extent Only							
Cadmium	mg/kg	34	18	16	0.06	17.07	87.6
Lead	mg/kg	30	8	22	0.27	10.37	22.35
Zinc	mg/kg	33	33	0	18	2,564	10,230
Useable for Human Health Risk Assessment*							
Cadmium	mg/kg	43	40	3	0.27	33.43	158
Lead	mg/kg	40	36	4	1.1	68.64	446
Zinc	mg/kg	43	43	0	87	5,563	23,500

* All data cleared for usability in the Human Health Risk Assessment will also be used in the Nature and Extent evaluation.

µg/L = micrograms per liter

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Table 5-2c. Surface Water Sample Data Summary - Tar Creek Watershed (including Lytle Creek)*Tar Creek Superfund Site Operable Unit 5 Remedial Investigation**Ottawa County, Oklahoma*

Analyte	Unit	Number of Samples	Number of Detects	Number of Nondetects	Minimum Detect	Average Detect	Maximum Detect
Useable for Nature and Extent Only							
Cadmium	mg/kg	529	354	175	0.06	14.15	195
Lead	mg/kg	413	166	247	0.04	21.12	141
Zinc	mg/kg	577	562	15	10	4,531	61,700
Useable for Human Health Risk Assessment*							
Cadmium	mg/kg	1,054	940	114	0.07	13.81	361
Lead	mg/kg	843	726	117	0.26	34.64	1,310
Zinc	mg/kg	1,269	1,257	12	18.6	5,055	63,400

* All data cleared for usability in the Human Health Risk Assessment will also be used in the Nature and Extent evaluation.

µg/L = micrograms per liter

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Table 5-2d. Surface Water Sample Data Summary - Neosho River Watershed*Tar Creek Superfund Site Operable Unit 5 Remedial Investigation**Ottawa County, Oklahoma*

Analyte	Unit	Number of Samples	Number of Detects	Number of Nondetects	Minimum Detect	Average Detect	Maximum Detect
Useable for Nature and Extent Only							
Cadmium	mg/kg	97	1	96	0.988	0.988	0.988
Lead	mg/kg	97	6	91	5	9.727	30.36
Zinc	mg/kg	83	44	39	6	26.64	339
Useable for Human Health Risk Assessment*							
Cadmium	mg/kg	78	3	75	1	1.297	1.7
Lead	mg/kg	72	11	61	2.6	12.96	21
Zinc	mg/kg	95	88	7	3.8	43.86	685

* All data cleared for usability in the Human Health Risk Assessment will also be used in the Nature and Extent evaluation.

µg/L = micrograms per liter

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Table 5-2e. Surface Water Sample Data Summary - Beaver Creek Watershed*Tar Creek Superfund Site Operable Unit 5 Remedial Investigation**Ottawa County, Oklahoma*

Analyte	Unit	Number of Samples	Number of Detects	Number of Nondetects	Minimum Detect	Average Detect	Maximum Detect
Useable for Nature and Extent Only							
Cadmium	mg/kg	84	22	62	0.1	0.7704	2.174
Lead	mg/kg	78	18	60	0.18	1.559	9.4
Zinc	mg/kg	125	115	10	6	381.1	2,400
Useable for Human Health Risk Assessment*							
Cadmium	mg/kg	160	85	75	0.1	1.597	10
Lead	mg/kg	124	79	45	0.2	13.81	101
Zinc	mg/kg	343	337	6	21	519.9	3,670

* All data cleared for usability in the Human Health Risk Assessment will also be used in the Nature and Extent evaluation.

µg/L = micrograms per liter

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Table 5-2f. Surface Water Sample Data Summary - Lost Creek Watershed
Tar Creek Superfund Site Operable Unit 5 Remedial Investigation
Ottawa County, Oklahoma

Analyte	Unit	Number of Samples	Number of Detects	Number of Nondetects	Minimum Detect	Average Detect	Maximum Detect
Useable for Nature and Extent Only							
Cadmium	mg/kg	23	0	23	--	--	--
Lead	mg/kg	23	0	23	--	--	--
Zinc	mg/kg	23	1	22	197	197	197
Useable for Human Health Risk Assessment*							
Cadmium	mg/kg	65	13	52	0.027	0.037	0.049
Lead	mg/kg	65	14	51	0.255	1.159	12
Zinc	mg/kg	65	21	44	2.87	42.19	408

* All data cleared for usability in the Human Health Risk Assessment will also be used in the Nature and Extent evaluation.

-- = no values for minimum, average, and maximum concentrations because all values were not detected.

µg/L = micrograms per liter

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Table 5-2g. Surface Water Sample Data Summary - Lower Spring River Watershed
Tar Creek Superfund Site Operable Unit 5 Remedial Investigation
Ottawa County, Oklahoma

Analyte	Unit	Number of Samples	Number of Detects	Number of Nondetects	Minimum Detect	Average Detect	Maximum Detect
Useable for Nature and Extent Only							
Cadmium	mg/kg	83	2	81	9.29	12.1	14.9
Lead	mg/kg	83	6	77	0.21	16.82	70.9
Zinc	mg/kg	92	68	24	5	222.6	3,820
Useable for Human Health Risk Assessment*							
Cadmium	mg/kg	112	29	83	0.014	2.339	15.2
Lead	mg/kg	111	41	70	0.538	12.11	67
Zinc	mg/kg	270	262	8	3.26	184.1	3,820

* All data cleared for usability in the Human Health Risk Assessment will also be used in the Nature and Extent evaluation.

µg/L = micrograms per liter

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Table 5-2h. Surface Water Sample Data Summary - All Watersheds*Tar Creek Superfund Site Operable Unit 5 Remedial Investigation**Ottawa County, Oklahoma*

Analyte	Unit	Number of Samples	Number of Detects	Number of Nondetects	Minimum Detect	Average Detect	Maximum Detect
Useable for Nature and Extent Only							
Cadmium	mg/kg	896	399	497	0.06	13.43	195
Lead	mg/kg	770	214	556	0.04	17.78	141
Zinc	mg/kg	978	858	120	5	3,141	61,700
Useable for Human Health Risk Assessment*							
Cadmium	mg/kg	1,537	1,111	426	0.014	13.09	361
Lead	mg/kg	1,280	924	356	0.2	31.94	1,310
Zinc	mg/kg	2,110	2,016	94	2.87	3,384	63,400

* All data cleared for usability in the Human Health Risk Assessment will also be used in the Nature and Extent evaluation.

µg/L = micrograms per liter

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Table 5-3. Mine Discharge Sample Data Summary
Tar Creek Superfund Site Operable Unit 5 Remedial Investigation
Ottawa County, Oklahoma

Analyte	Unit	Number of Samples	Number of Detects	Number of Nondetects	Minimum Detect	Average Detect	Maximum Detect
Commerce Area Discharge Data (within Tar Creek Watershed)							
Useable for Nature and Extent Only							
Cadmium	mg/kg	107	74	33	5	19.21	107
Lead	mg/kg	105	57	48	0.14	66.2	98.59
Zinc	mg/kg	107	102	5	909	7,375	43,400
Useable for Human Health Risk Assessment*							
Cadmium	mg/kg	230	199	31	4.552	17.13	117
Lead	mg/kg	229	185	44	3.13	64.71	394
Zinc	mg/kg	230	225	5	1,060	8,507	46,600
Beaver Creek Area Discharge Data (within Beaver Creek Watershed)							
Useable for Nature and Extent Only							
Cadmium	mg/kg	22	22	0	1.08	2.581	4.475
Lead	mg/kg	3	3	0	29.43	30.64	31.49
Zinc	mg/kg	28	28	0	1,411	2,672	6,838
Useable for Human Health Risk Assessment*							
Cadmium	mg/kg	81	81	0	0.7837	2.644	11.39
Lead	mg/kg	26	26	0	9.023	44.37	191.3
Zinc	mg/kg	94	94	0	1,109	2,705	7,293
Commerce Area and Beaver Creek Area Discharge Data Combined							
Useable for Nature and Extent Only							
Cadmium	mg/kg	129	96	33	1.08	15.4	107
Lead	mg/kg	108	60	48	0.14	64.42	98.59
Zinc	mg/kg	135	130	5	909	6,362	43,400
Useable for Human Health Risk Assessment*							
Cadmium	mg/kg	311	280	31	0.7837	12.94	117
Lead	mg/kg	255	211	44	3.13	62.2	394
Zinc	mg/kg	324	319	5	1,060	6,797	46,600

* All data cleared for usability in the Human Health Risk Assessment will also be used in the Nature and Extent evaluation.

-- = no values for minimum, average, and maximum concentrations because all values were not detected.

µg/L = micrograms per liter

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Table 5-4. Fish Sample Data Summary*Tar Creek Superfund Site Operable Unit 5 Remedial Investigation**Ottawa County, Oklahoma*

Fish Sample Grouping	Analyte	Unit	Number of Samples	Number of Detects	Number of Nondetects	Minimum Detect	Average Detect	Maximum Detect
Game Fish Fillet	Cadmium	mg/kg	27	0	27	--	--	--
Game Fish Fillet	Lead	mg/kg	27	0	27	--	--	--
Game Fish Fillet	Zinc	mg/kg	27	27	0	2	4.4	8
Game Fish Whole Eviscerated	Cadmium	mg/kg	12	0	12	--	--	--
Game Fish Whole Eviscerated	Lead	mg/kg	12	2	10	0.28	0.39	0.5
Game Fish Whole Eviscerated	Zinc	mg/kg	12	12	0	8.1	18.1	33
Non-Game Fish Fillet	Cadmium	mg/kg	24	2	22	0.06	0.06	0.06
Non-Game Fish Fillet	Lead	mg/kg	24	8	16	0.06	0.234	0.74
Non-Game Fish Fillet	Zinc	mg/kg	24	24	0	1.9	7.78	17.9
Non-Game Fish Whole Eviscerated	Cadmium	mg/kg	7	0	7	--	--	--
Non-Game Fish Whole Eviscerated	Lead	mg/kg	7	6	1	0.25	1.04	1.9
Non-Game Fish Whole Eviscerated	Zinc	mg/kg	7	7	0	25	51.7	66

Notes:

Fillet data include samples with skin on and skin removed.

The whole eviscerated fish samples had the head removed prior to processing the samples.

Game fish samples include the following fish: channel catfish, blue catfish, black crappie, white crappie, largemouth bass, spotted bass, and white bass

Non-game fish samples include the following fish: bluegill sunfish, carp, freshwater drum, paddlefish, redhorse sucker, and smallmouth buffalo

-- = no values for minimum, average, and maximum concentrations because all values were not detected.

mg/kg = milligram per kilogram

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Table 5-5. Mussel Sample Data Summary

*Tar Creek Superfund Site Operable Unit 5 Remedial Investigation
Ottawa County, Oklahoma*

Analyte	Unit	Number of Samples	Number of Detects	Number of Nondetects	Minimum Detect	Average Detect	Maximum Detect
Cadmium	mg/kg	14	14	0	0.71	1.194	2.3
Lead	mg/kg	14	14	0	1.2	4.243	8.4
Zinc	mg/kg	14	14	0	130	367.1	970

Notes:

Each sample was a composite containing enough clams to obtain 500 milligrams of sample tissue (dry weight) per sample. Number of individuals per sample ranged from 14 to 46.

mg/kg = milligrams per kilogram

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Table 5-6. Plant Sample Data Summary
Tar Creek Superfund Site Operable Unit 5 Remedial Investigation
Ottawa County, Oklahoma

Plant Species	Analyte	Unit	Number of Samples	Number of Detects	Number of Nondetects	Minimum Detect	Average Detect	Maximum Detect
Arrowhead root	Cadmium	mg/kg	2	2	0	0.79	1.15	1.5
Arrowhead root	Lead	mg/kg	2	2	0	12.9	17.5	22
Arrowhead root	Zinc	mg/kg	2	2	0	129	165	201
Arrowhead root	Moisture, percent	percent	2	2	0	76.2	79.8	83.4
Duckweed	Cadmium	mg/kg	3	3	0	2.11	57.9	162
Duckweed	Lead	mg/kg	3	3	0	18.9	197	517
Duckweed	Zinc	mg/kg	3	3	0	235	8840	24000
Duckweed	Moisture, percent	percent	3	3	0	81.6	89	96.6
Reference Sample Location NRC-5-05								
Duckweed	Cadmium	mg/kg	1	1	0	--	--	4.8
Duckweed	Lead	mg/kg	1	1	0	--	--	2.8
Duckweed	Zinc	mg/kg	1	1	0	--	--	269

Notes:

Arrowhead root samples were collected from the plant root only

Duckweed samples were whole plant

Samples were washed in the field after collection

Sample location NRC-5-05 (see Figure 5- 6) is a reference location for Duckweed, and analytical results from this location are shown separately from the data summary results for the remaining samples.

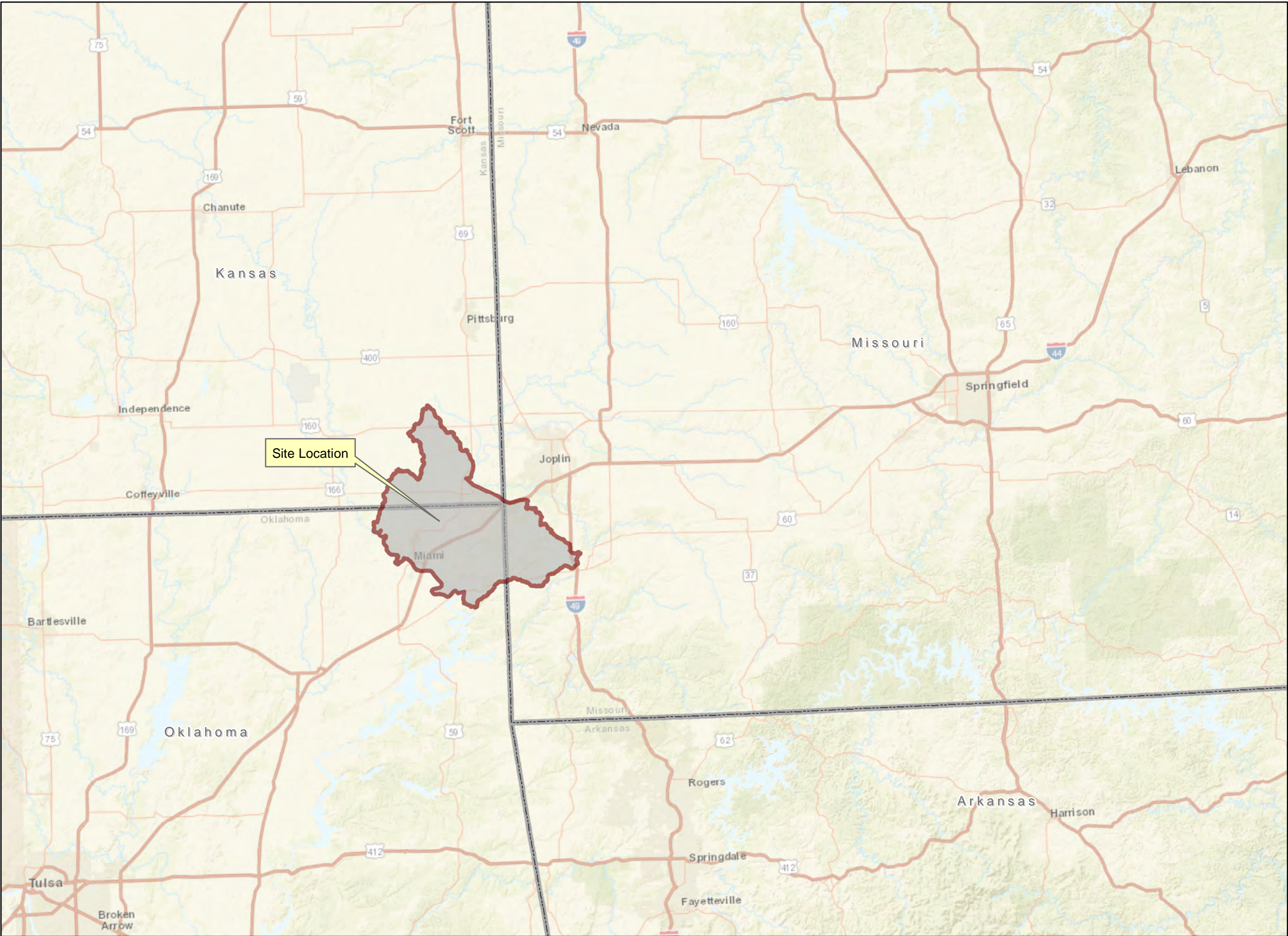
-- = no values for minimum, average, and maximum concentrations because all values were not detected.

mg/kg = milligram per kilogram



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Figures

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Legend

-  Site Location
-  State Boundary

Notes:

- 1) Imagery Source: ESRI World Street Map online mapping service
- 2) Operable Unit 5 does not have specific boundaries, but is defined by the extent of the watersheds that have been identified by the EPA as relevant to the site.

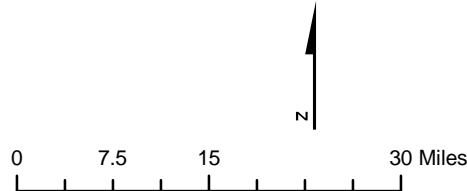
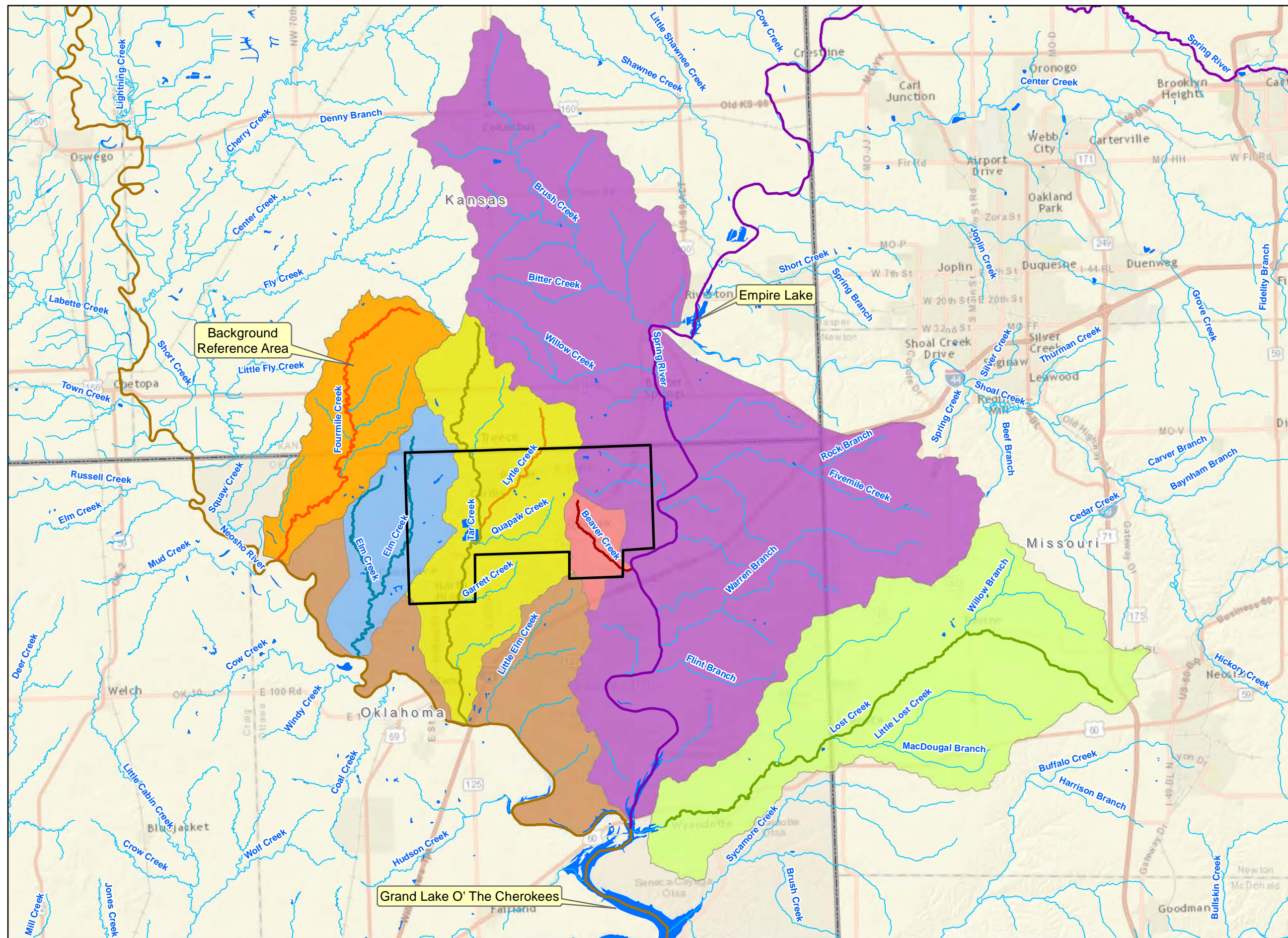


Figure 1-1.
Site Location Map
Tar Creek Superfund Site
Operable Unit 5 Remedial Investigation
Ottawa County, Oklahoma



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Legend

- Tar Creek OU 4 Boundary
- State Boundary
- Fourmile Creek
- Lost Creek
- Neosho River
- Lower Spring River
- Beaver Creek
- Elm Creek
- Lytle Creek
- Tar Creek
- NHD Stream
- Beaver Creek Watershed
- Elm Creek Watershed
- Lost Creek Watershed
- Neosho River Watershed
- Lower Spring River Watershed
- Tar Creek Watershed
- Fourmile Creek Watershed

Notes:

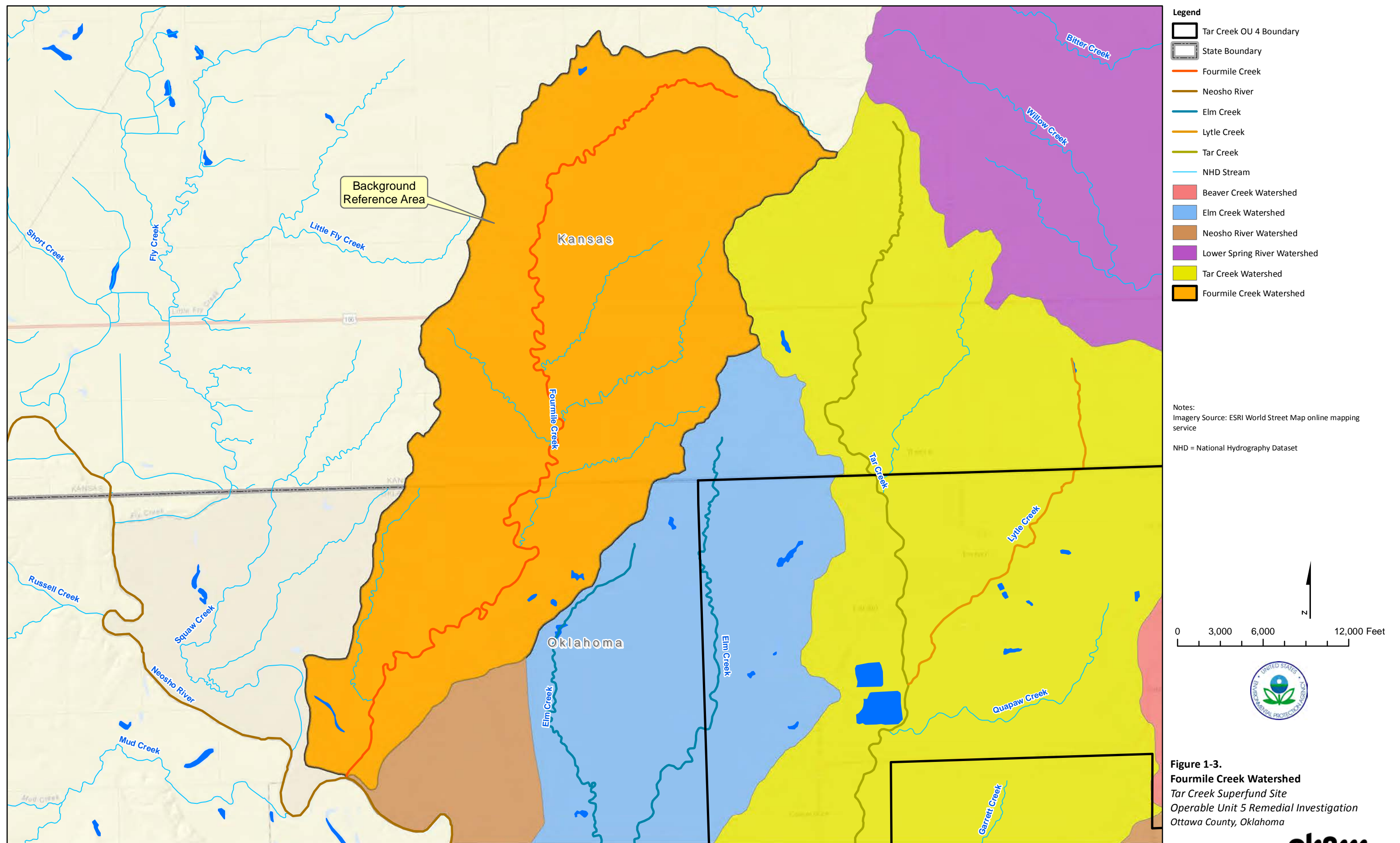
- 1) Imagery Source: ESRI World Street Map online mapping service
- 2) Operable Unit 5 does not have specific boundaries, but is defined by the extent of the watersheds that have been identified by the EPA as relevant to the superfund site.

NHD = National Hydrography Dataset

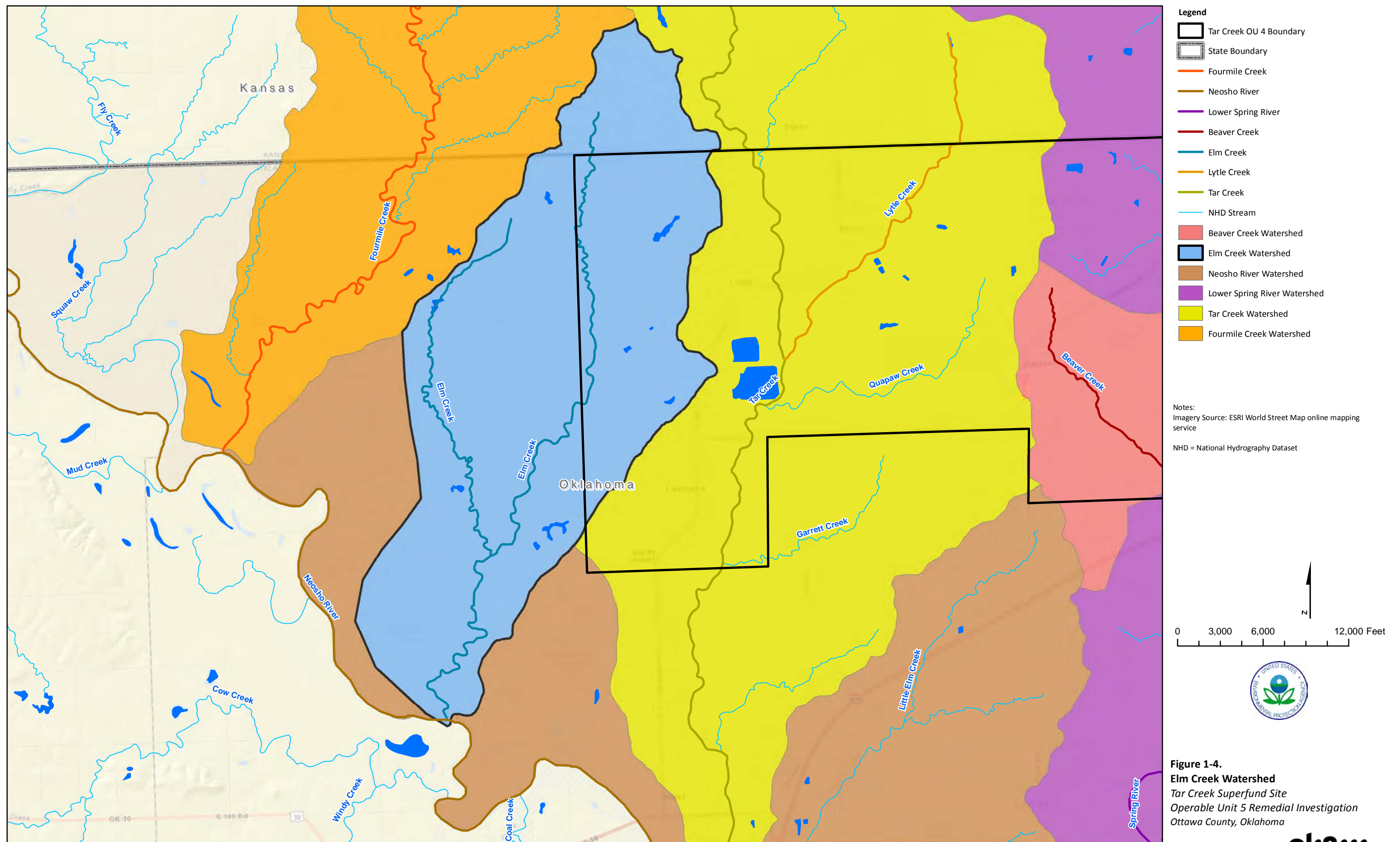
0 1.75 3.5 7 Miles

Figure 1-2.
OU5 Watersheds
 Tar Creek Superfund Site
 Operable Unit 5 Remedial Investigation
 Ottawa County, Oklahoma

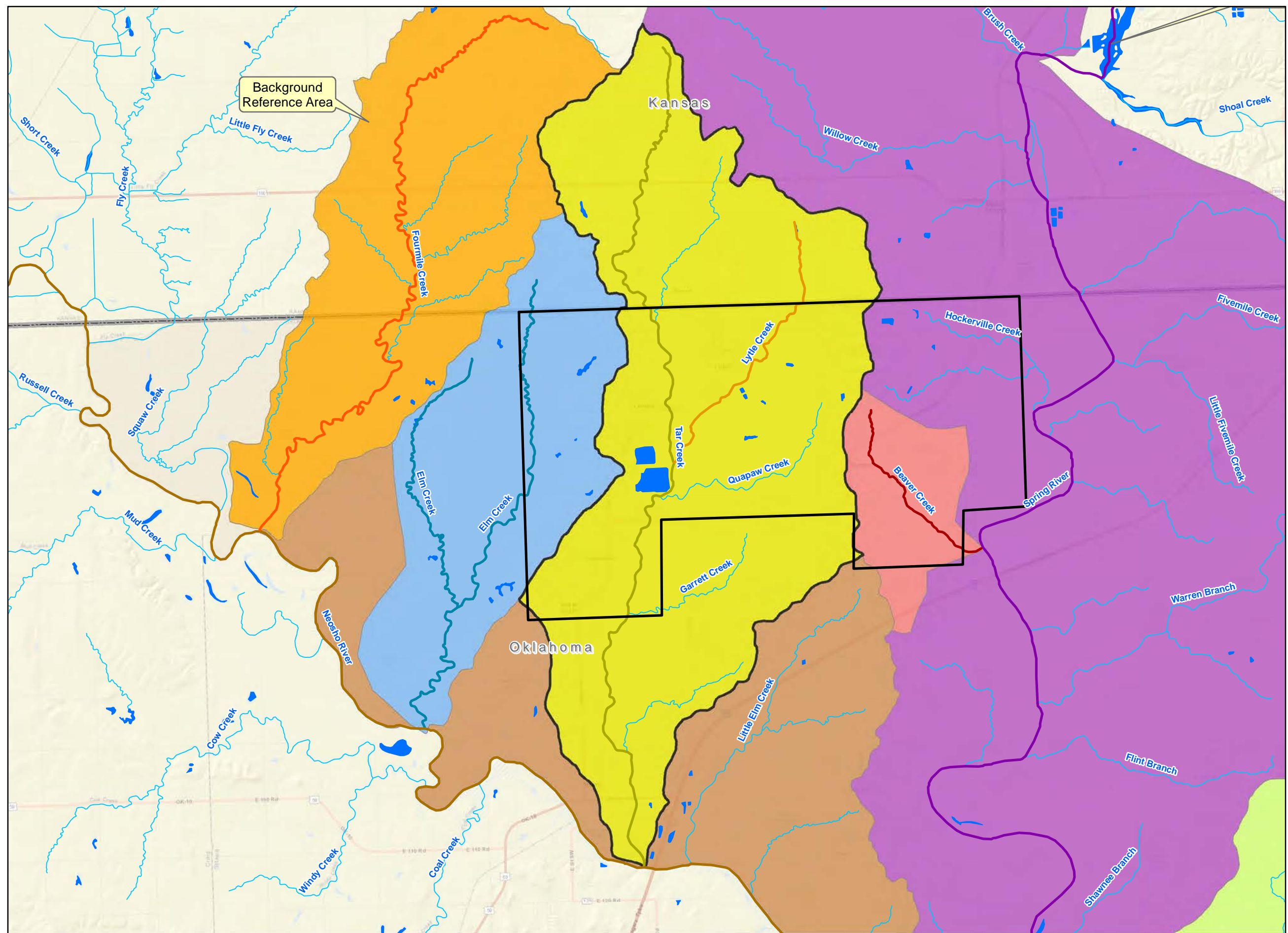
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- Legend**
- Tar Creek OU 4 Boundary
 - State Boundary
 - Fourmile Creek
 - Neosho River
 - Lower Spring River
 - Beaver Creek
 - Elm Creek
 - Lytle Creek
 - Tar Creek
 - NHD Stream
 - Beaver Creek Watershed
 - Elm Creek Watershed
 - Lost Creek Watershed
 - Neosho River Watershed
 - Lower Spring River Watershed
 - Tar Creek Watershed
 - Fourmile Creek Watershed

Notes:
Imagery Source: ESRI World Street Map online mapping service

NHD = National Hydrography Dataset

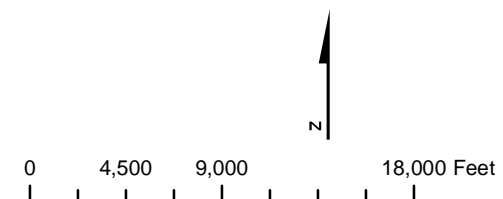
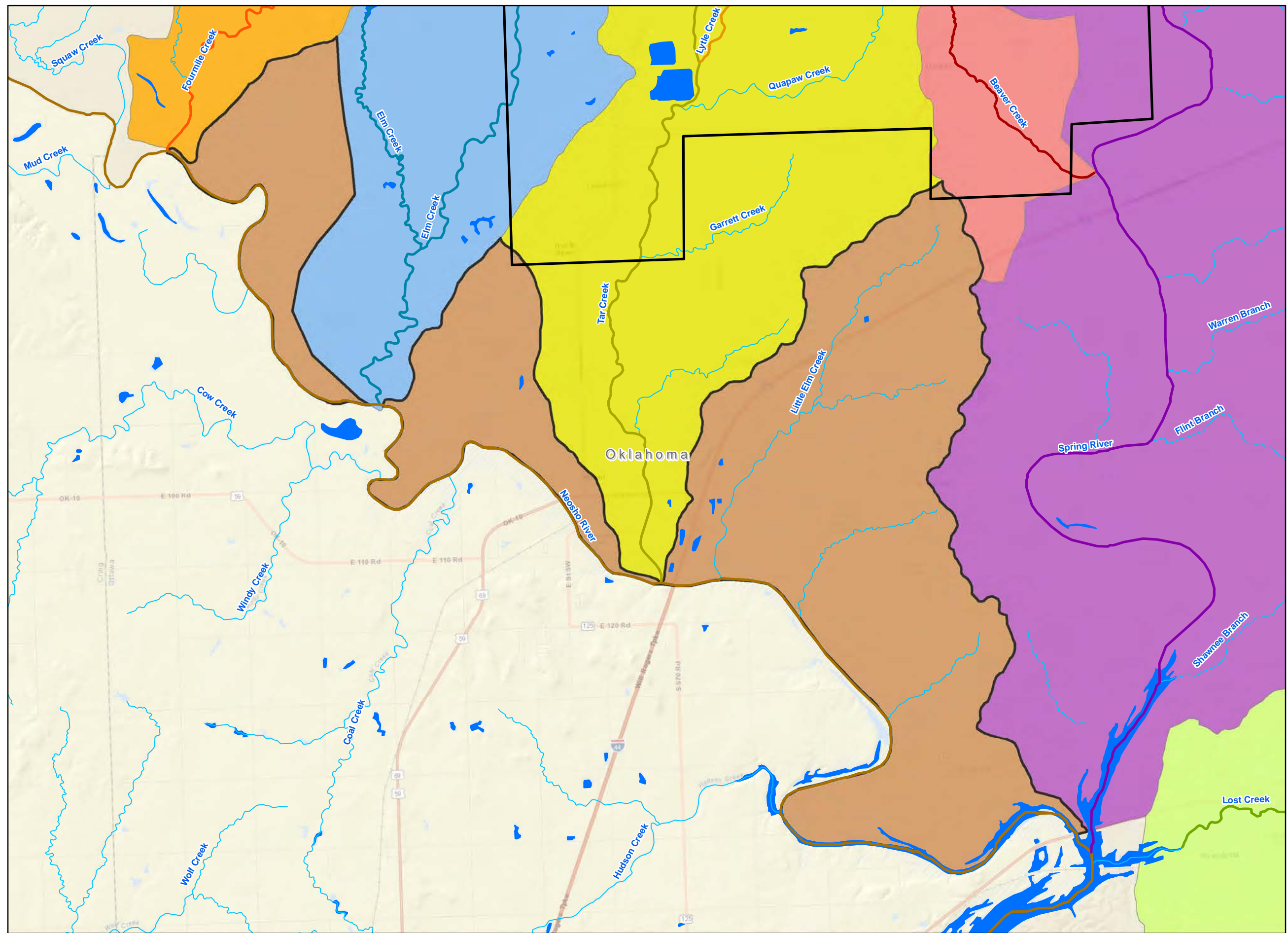


Figure 1-5.
Tar Creek Watershed
Tar Creek Superfund Site
Operable Unit 5 Remedial Investigation
Ottawa County, Oklahoma

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Legend

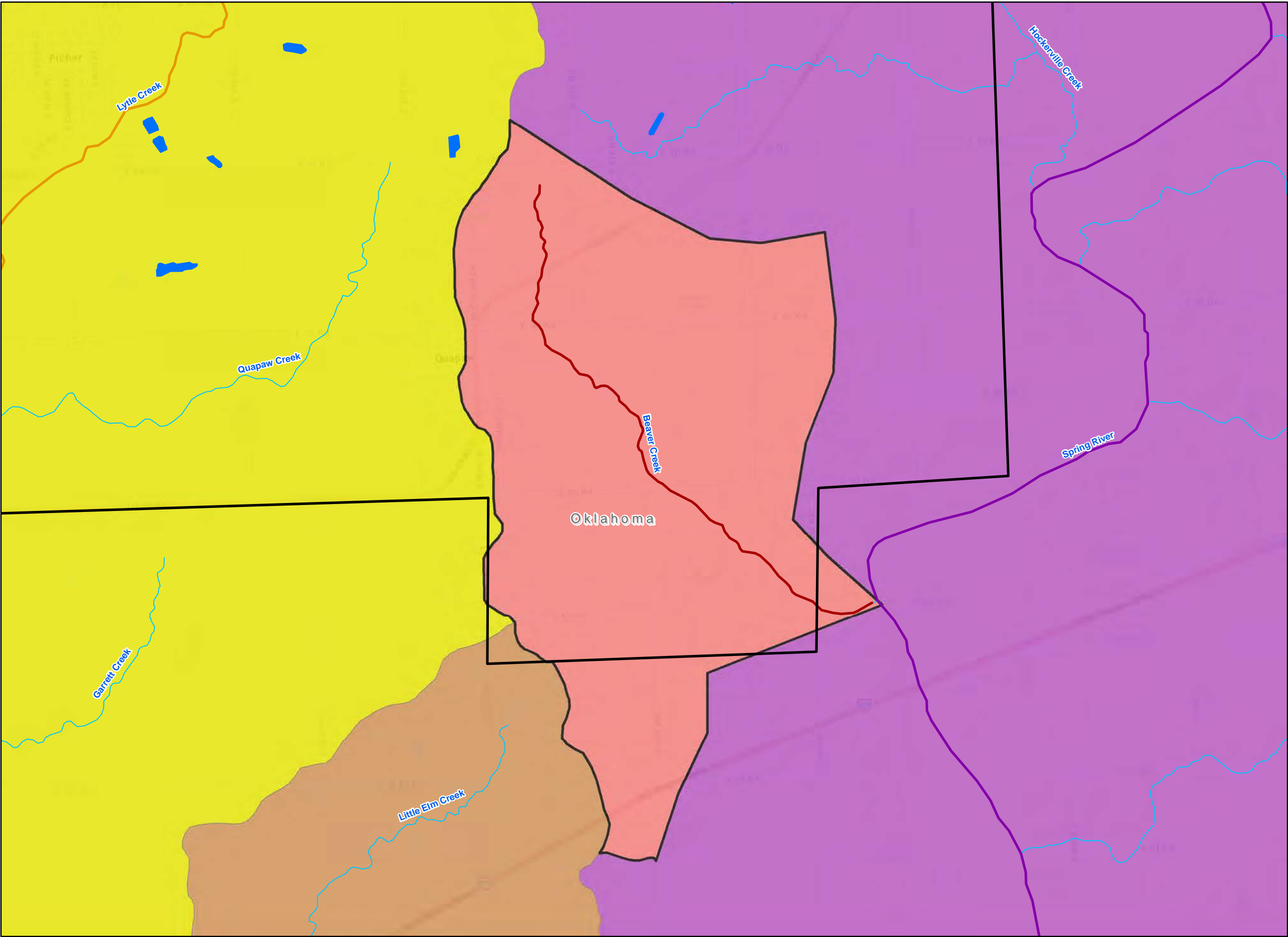
- Tar Creek OU 4 Boundary
- State Boundary
- Fourmile Creek
- Lost Creek
- Neosho River
- Lower Spring River
- Beaver Creek
- Elm Creek
- Lytle Creek
- Tar Creek
- NHD Stream
- Beaver Creek Watershed
- Elm Creek Watershed
- Lost Creek Watershed
- Neosho River Watershed
- Lower Spring River Watershed
- Tar Creek Watershed
- Fourmile Creek Watershed

Notes:
 Imagery Source: ESRI World Street Map online mapping service
 NHD = National Hydrography Dataset

Figure 1-6.
Neosho River Watershed
Tar Creek Superfund Site
Operable Unit 5 Remedial Investigation
Ottawa County, Oklahoma



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- Legend**
- Tar Creek OU 4 Boundary
 - State Boundary
 - Lower Spring River
 - Beaver Creek
 - Lytle Creek
 - NHD Stream
 - Beaver Creek Watershed
 - Neosho River Watershed
 - Lower Spring River Watershed
 - Tar Creek Watershed

Notes:
Imagery Source: ESRI World Street Map online mapping service

NHD = National Hydrography Dataset

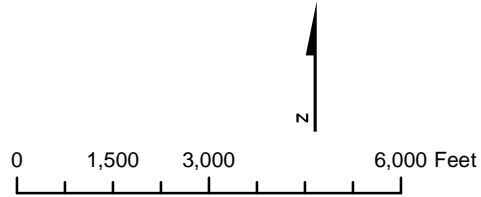
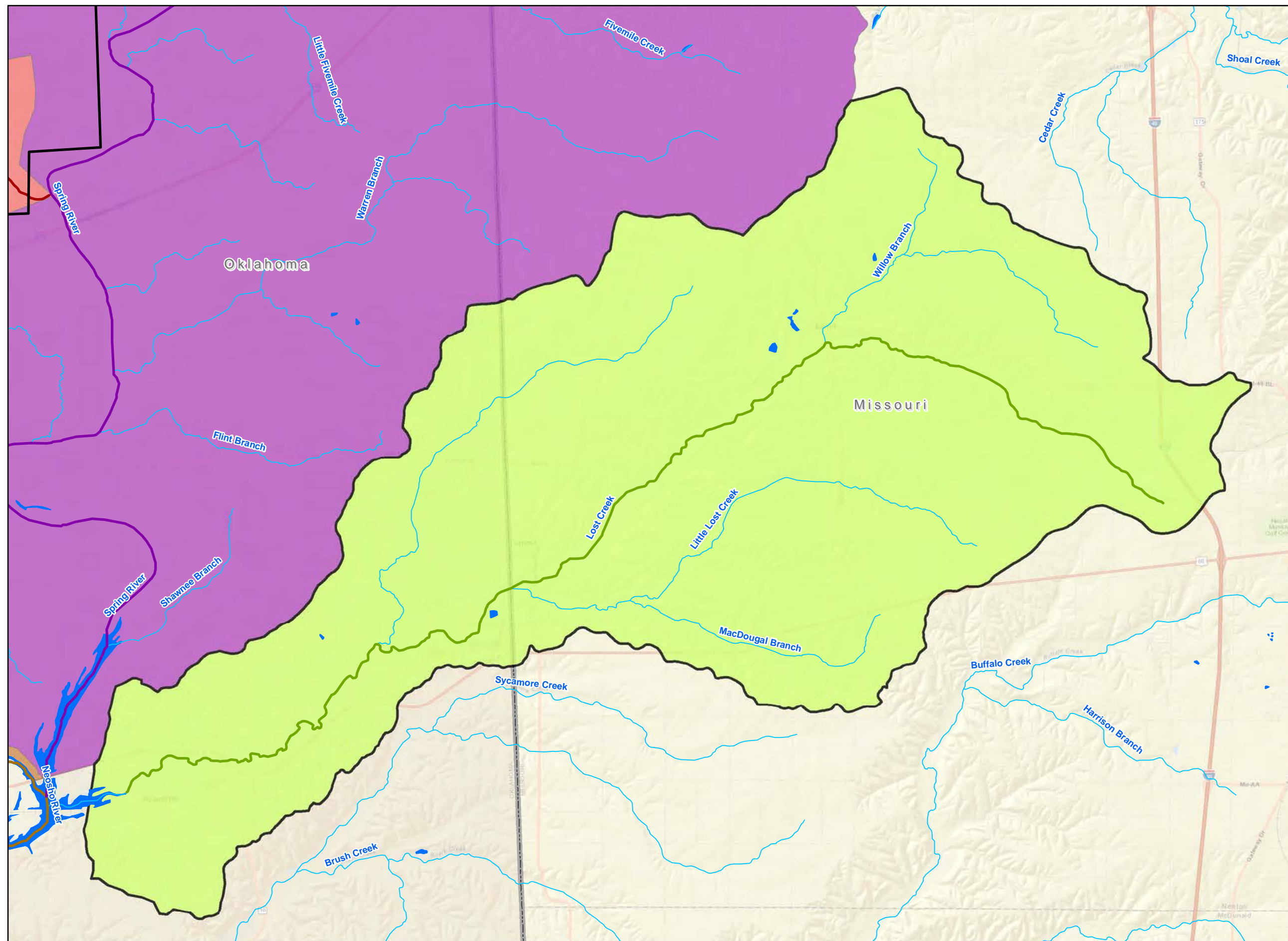


Figure 1-7.
Beaver Creek Watershed
Tar Creek Superfund Site
Operable Unit 5 Remedial Investigation
Ottawa County, Oklahoma

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- Legend**
- Tar Creek OU 4 Boundary
 - State Boundary
 - Lost Creek
 - Neosho River
 - Lower Spring River
 - Beaver Creek
 - NHD Stream
 - Beaver Creek Watershed
 - Lost Creek Watershed
 - Neosho River Watershed
 - Lower Spring River Watershed

Notes:
Imagery Source: ESRI World Street Map online mapping service

NHD = National Hydrography Dataset

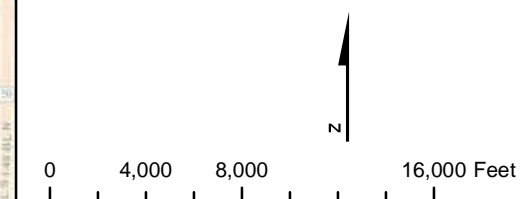
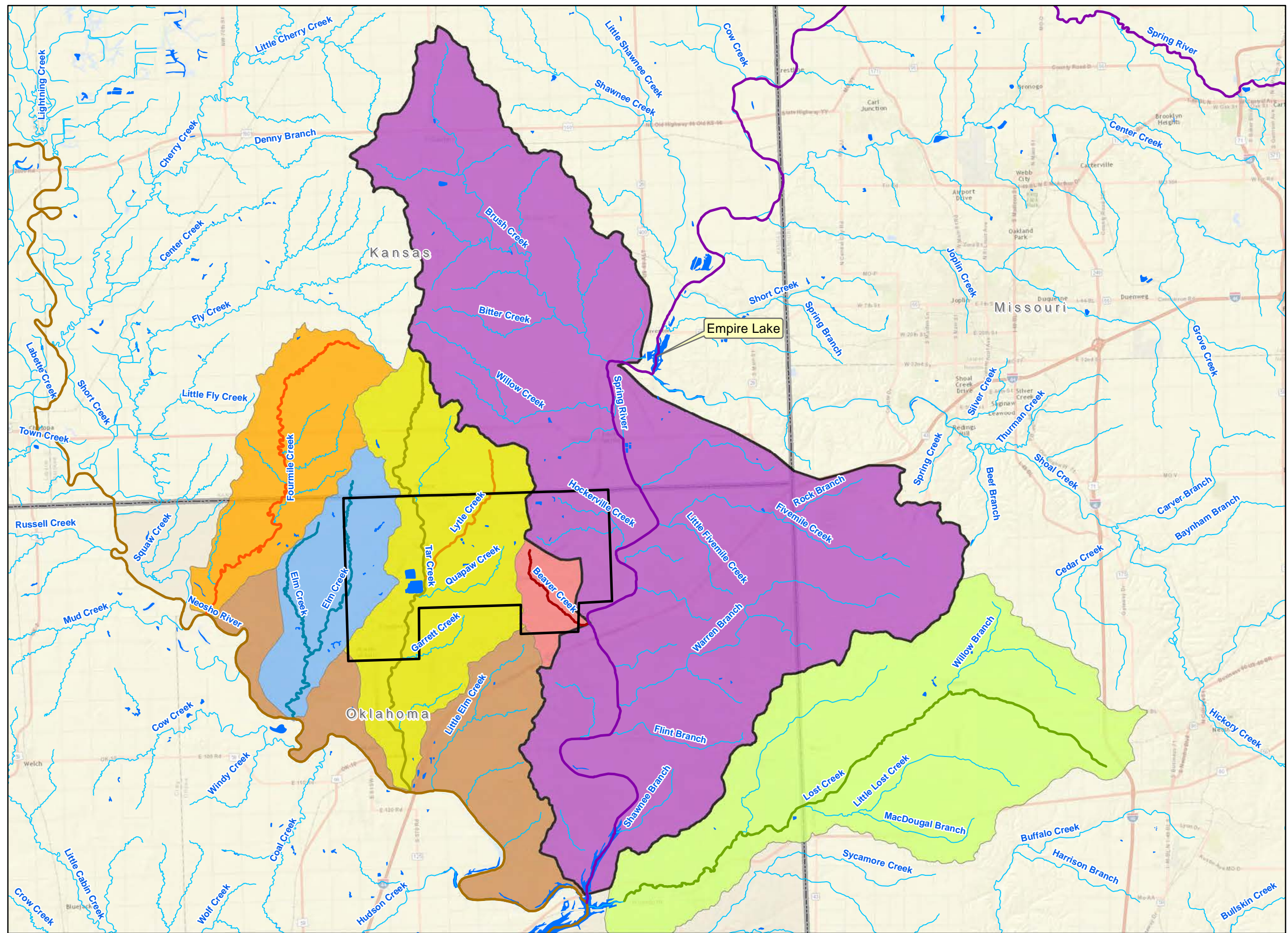


Figure 1-8.
Lost Creek Watershed
Tar Creek Superfund Site
Operable Unit 5 Remedial Investigation
Ottawa County, Oklahoma

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- Legend**
- Tar Creek OU 4 Boundary
 - State Boundary
 - Fourmile Creek
 - Lost Creek
 - Neosho River
 - Lower Spring River
 - Beaver Creek
 - Elm Creek
 - Lytle Creek
 - Tar Creek
 - NHD Stream
 - Beaver Creek Watershed
 - Elm Creek Watershed
 - Lost Creek Watershed
 - Neosho River Watershed
 - Lower Spring River Watershed
 - Tar Creek Watershed
 - Fourmile Creek Watershed

Notes:
 Imagery Source: ESRI World Street Map online mapping service
 NHD = National Hydrography Dataset

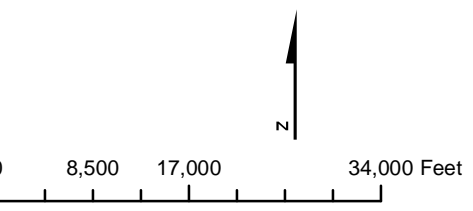
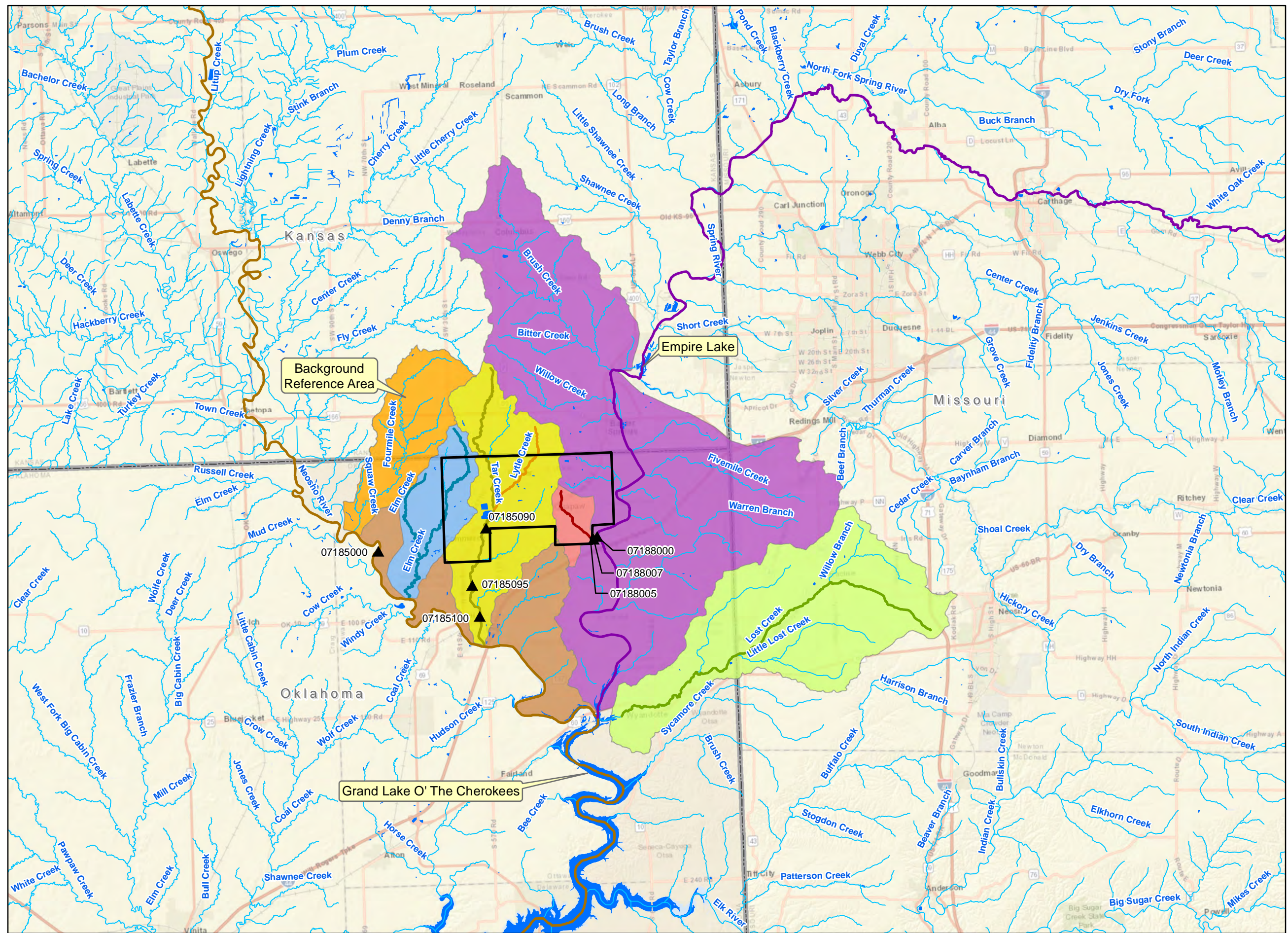


Figure 1-9.
Lower Spring River Watershed
 Tar Creek Superfund Site
 Operable Unit 5 Remedial Investigation
 Ottawa County, Oklahoma



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- Legend**
- ▲ USGS Stream Gauge
 - ▭ Tar Creek OU 4 Boundary
 - Lost Creek
 - Neosho River
 - Lower Spring River
 - Beaver Creek
 - Elm Creek
 - Lytle Creek
 - Tar Creek
 - NHD Stream
 - Beaver Creek Watershed
 - Elm Creek Watershed
 - Lost Creek Watershed
 - Neosho River Watershed
 - Lower Spring River Watershed
 - Tar Creek Watershed
 - Fourmile Creek Watershed

Notes:
 Imagery Source: ESRI World Street Map online mapping service
 NHD = National Hydrography Dataset
 USGS = United States Geological Survey

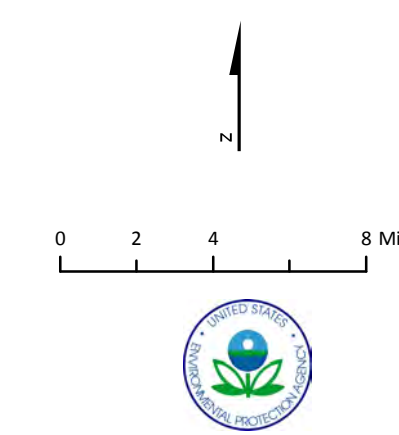
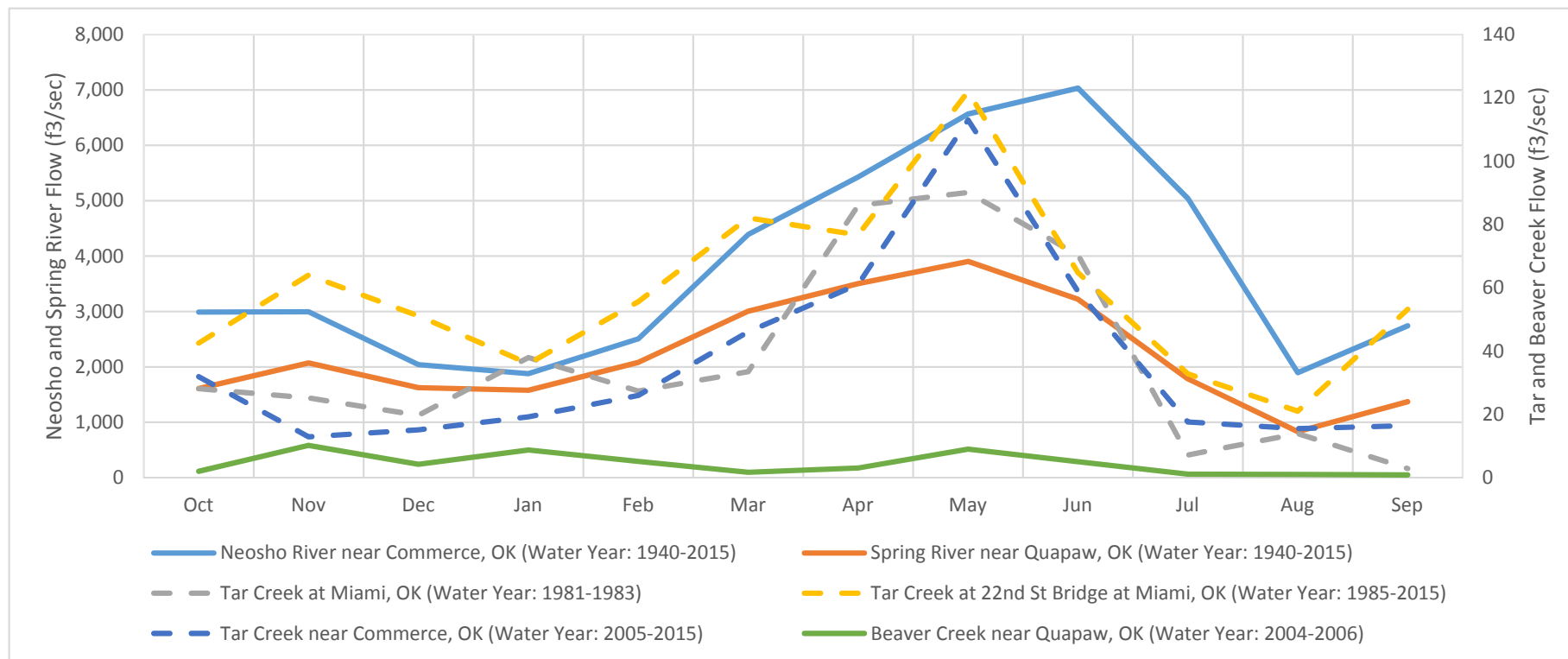


Figure 2-1.
USGS Stream Gauges
 Tar Creek Superfund Site
 Operable Unit 5 Remedial Investigation
 Ottawa County, Oklahoma



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Note:
f3/sec = cubic feet per second



Figure 2-2.
Monthly Mean Flow at USGS Streamflow Gages
Tar Creek Superfund Site
Operable Unit 5 Remedial Investigation
Ottawa County, Oklahoma

ch2m.

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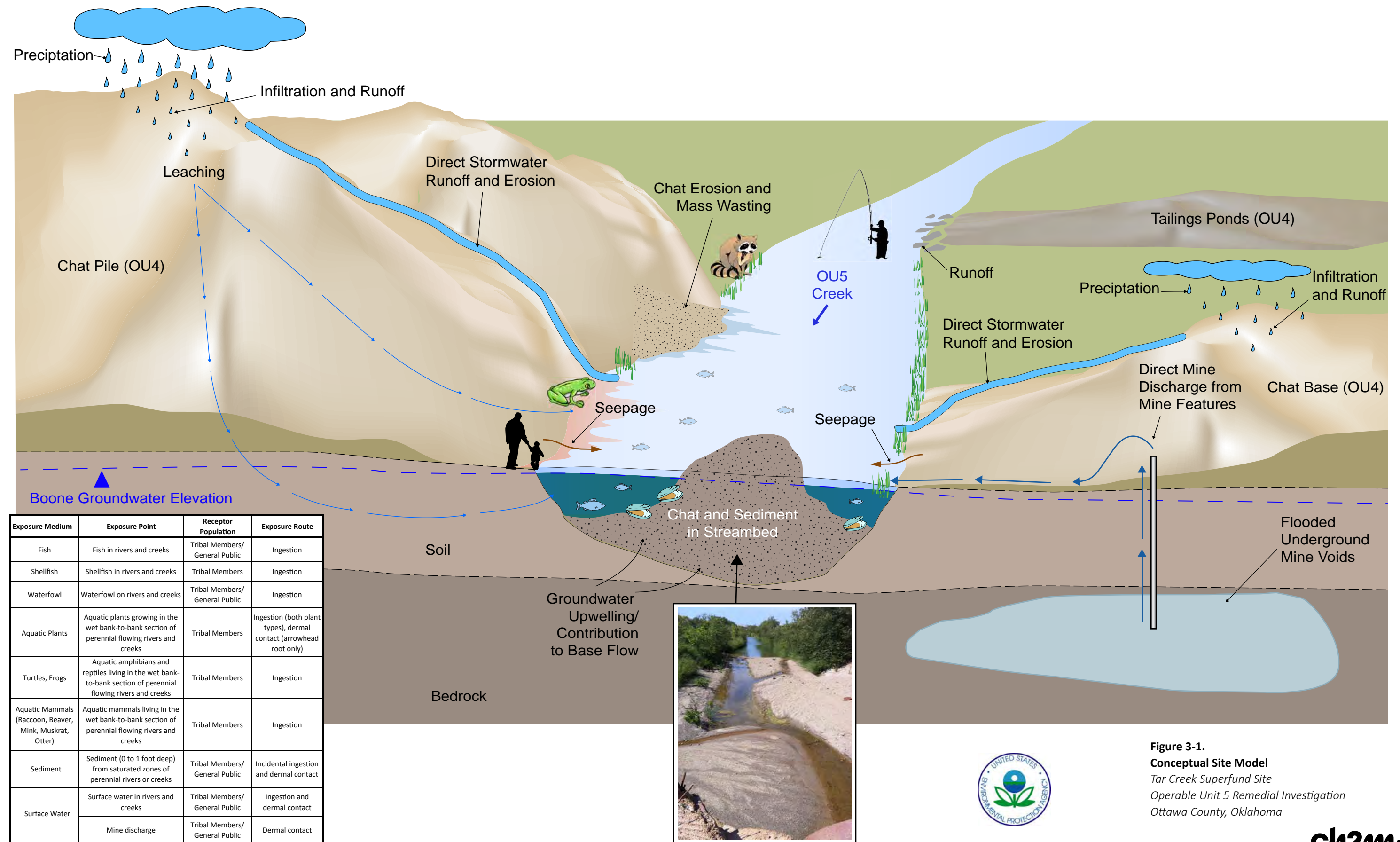
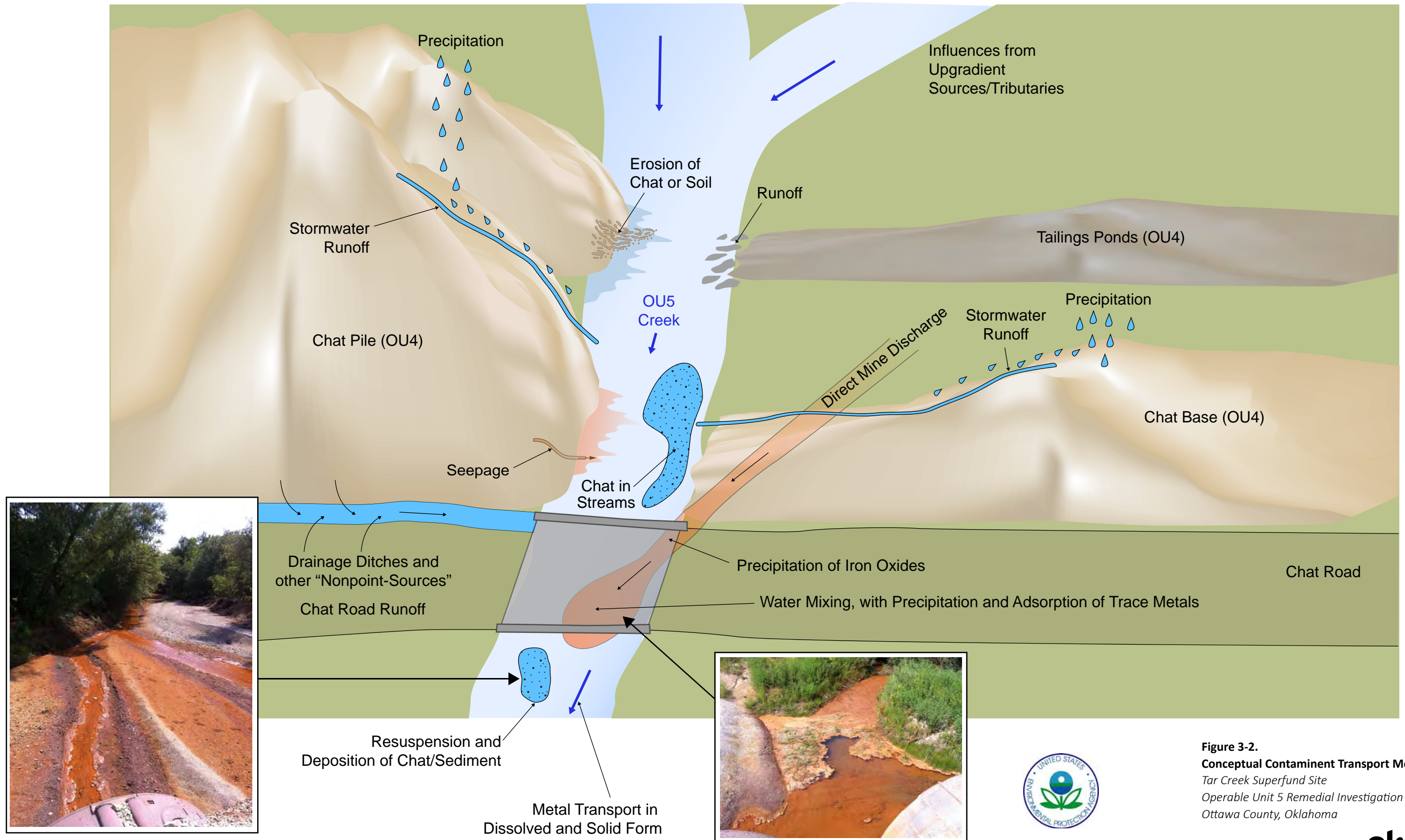


Figure 3-1.
Conceptual Site Model
 Tar Creek Superfund Site
 Operable Unit 5 Remedial Investigation
 Ottawa County, Oklahoma



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Note: Processes shown are surface features only.

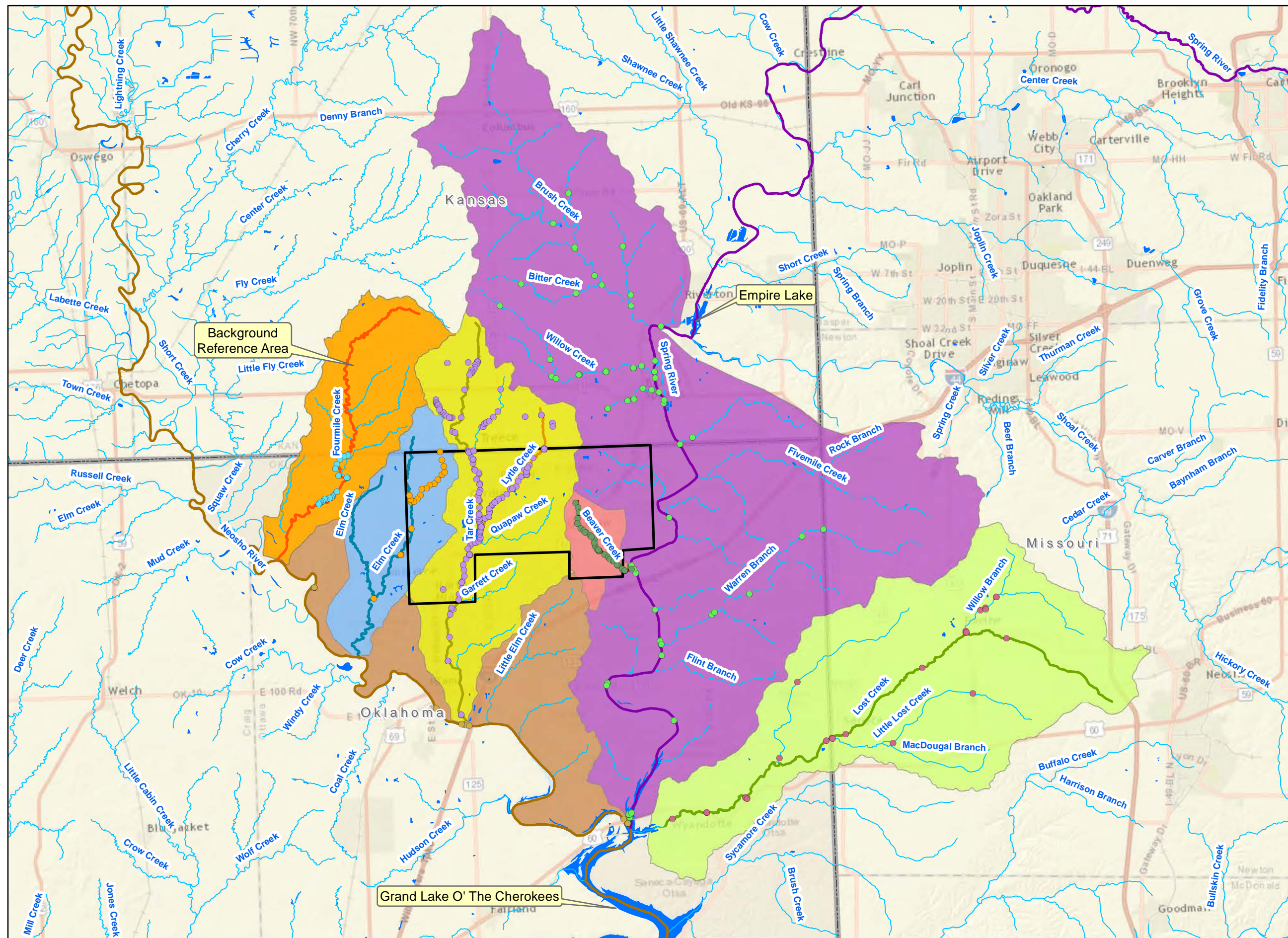
EN051616112ISCO tar_creek_csm_plan_view_rev5.ai 11/16



Figure 3-2.
Conceptual Contaminant Transport Model
 Tar Creek Superfund Site
 Operable Unit 5 Remedial Investigation
 Ottawa County, Oklahoma

ch2m.

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Legend

Sediment Samples by Watershed

- Beaver Creek
- Elm Creek
- Fourmile Creek
- Lost Creek
- Neosho River
- Spring River
- Tar Creek

Tar Creek OU 4 Boundary

State Boundary

Fourmile Creek

Lost Creek

Neosho River

Lower Spring River

Beaver Creek

Elm Creek

Lytle Creek

Tar Creek

NHD Stream

Beaver Creek Watershed

Elm Creek Watershed

Lost Creek Watershed

Neosho River Watershed

Lower Spring River Watershed

Tar Creek Watershed

Fourmile Creek Watershed

Notes:

Imagery Source: ESRI World Street Map online mapping service

NHD = National Hydrography Dataset

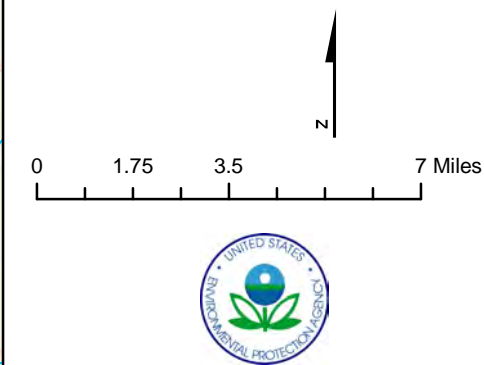
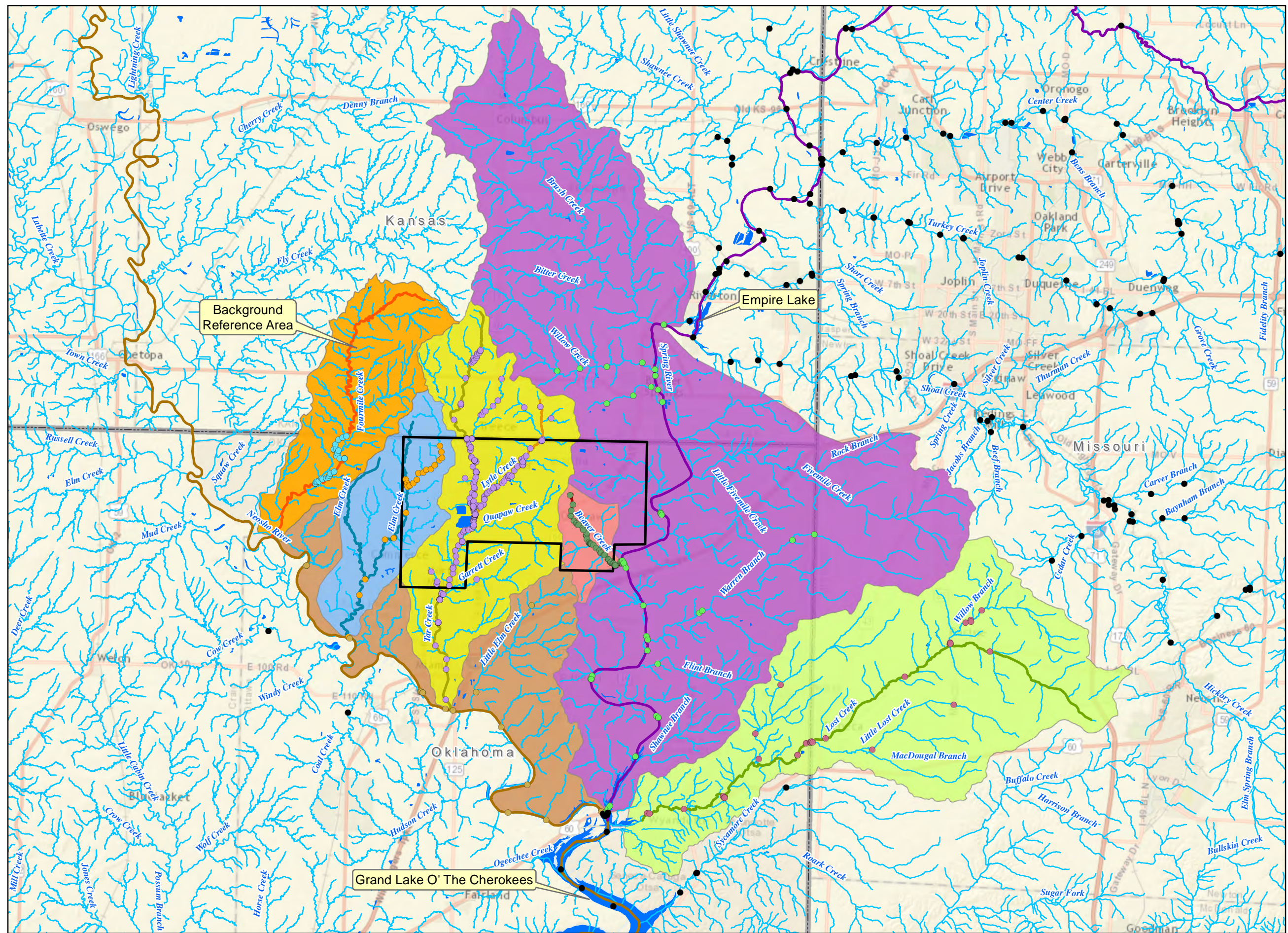


Figure 5-1.
Sediment Sample Locations
 Tar Creek Superfund Site
 Operable Unit 5 Remedial Investigation
 Ottawa County, Oklahoma

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Legend

Surface Water Samples by Watershed

- Beaver Creek
- Elm Creek
- Fourmile Creek
- Lost Creek
- Neosho River
- Spring River
- Tar Creek
- Not in OU5 Exposure Watershed

Other Legend Items:

- Tar Creek OU 4 Boundary
- State Boundary
- Fourmile Creek
- Lost Creek
- Neosho River
- Lower Spring River
- Beaver Creek
- Elm Creek
- Lytle Creek
- Tar Creek
- NHD Stream
- Beaver Creek Watershed
- Elm Creek Watershed
- Lost Creek Watershed
- Neosho River Watershed
- Lower Spring River Watershed
- Tar Creek Watershed
- Fourmile Creek Watershed

Notes:

1) Imagery Source: ESRI World Street Map online mapping service

NHD = National Hydrography Dataset

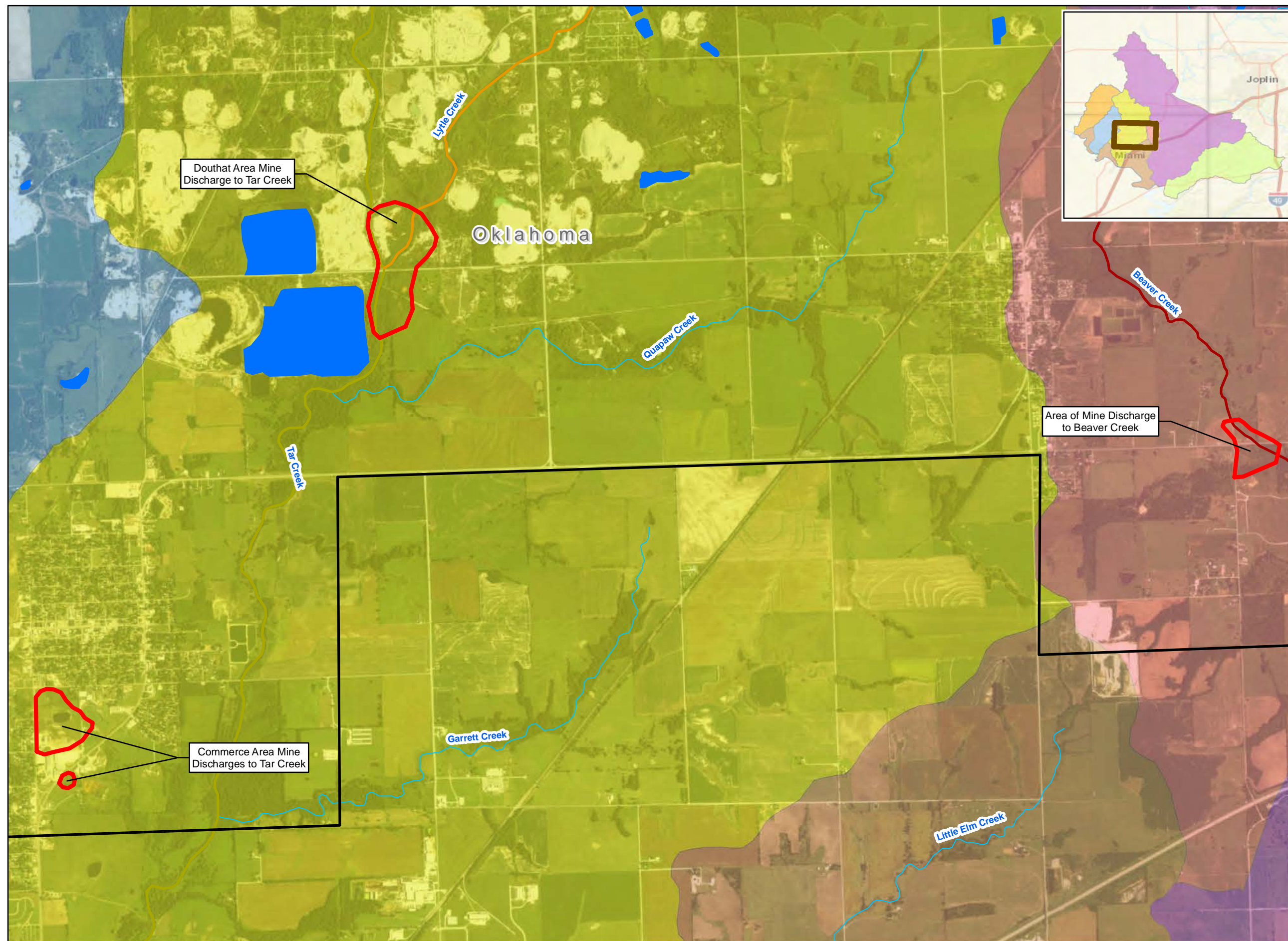
0 1.75 3.5 7 Miles

United States Environmental Protection Agency

Figure 5-2.
Surface Water Sample Locations
 Tar Creek Superfund Site
 Operable Unit 5 Remedial Investigation
 Ottawa County, Oklahoma



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- Legend**
- Area of Mine Discharge to Surface Water
 - Tar Creek OU 4 Boundary
 - State Boundary
 - Fourmile Creek
 - Lost Creek
 - Neosho River
 - Lower Spring River
 - Beaver Creek
 - Elm Creek
 - Lytle Creek
 - Tar Creek
 - NHD Stream
 - Beaver Creek Watershed
 - Elm Creek Watershed
 - Lost Creek Watershed
 - Neosho River Watershed
 - Lower Spring River Watershed
 - Tar Creek Watershed
 - Fourmile Creek Watershed

Notes:
Imagery Source: ESRI World Imagery online mapping service

NHD = National Hydrography Dataset

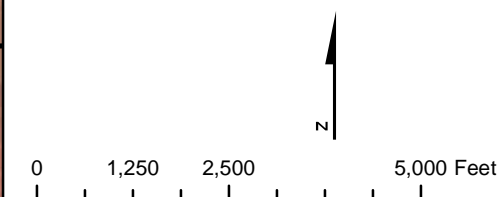
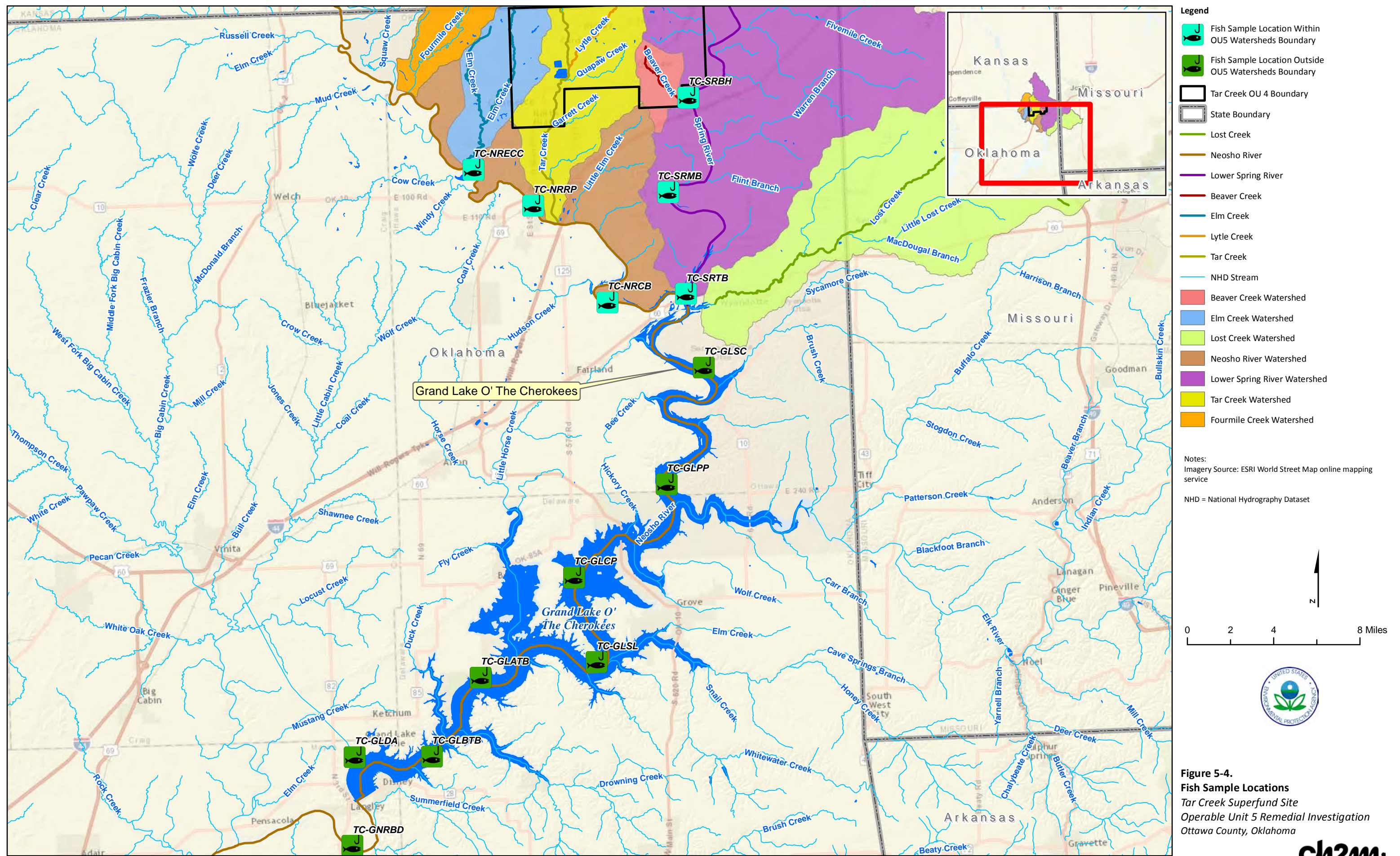
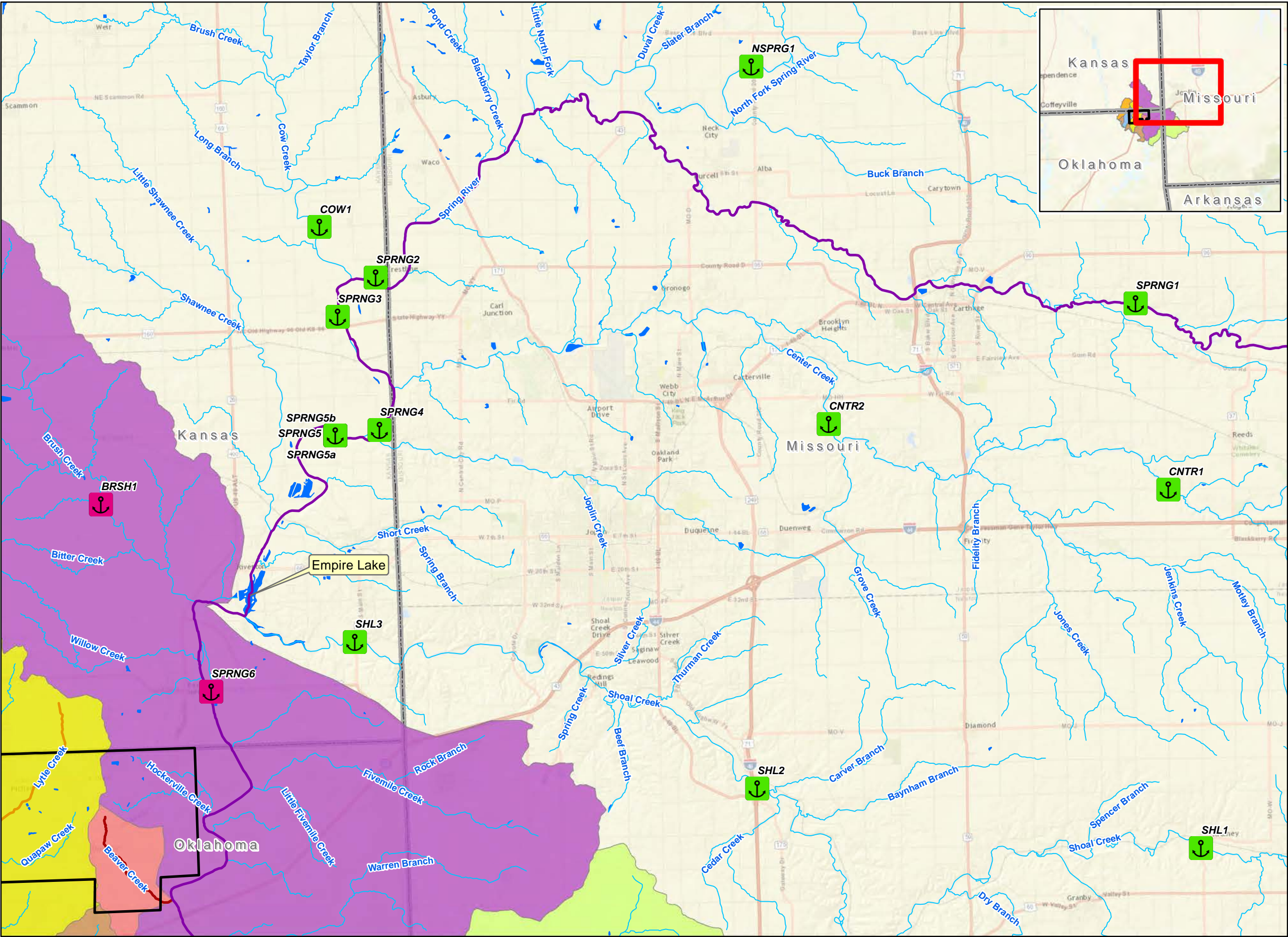


Figure 5-3.
Areas of Mine Discharge to Surface Water
Tar Creek Superfund Site
Operable Unit 5 Remedial Investigation
Ottawa County, Oklahoma

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Legend

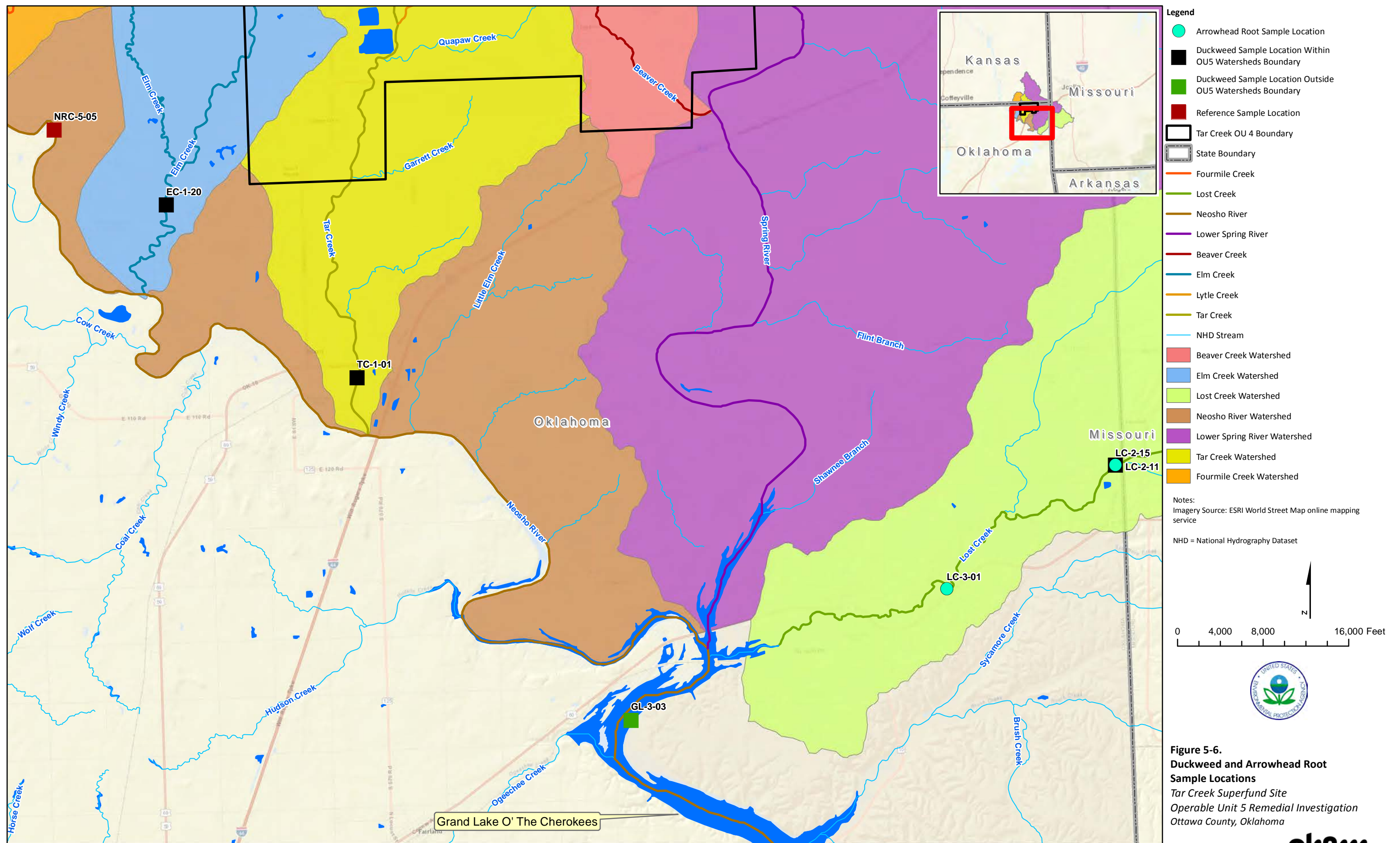
- Mussel Sample Location Within OU5 Watersheds Boundary
- Mussel Sample Location Outside OU5 Watersheds Boundary
- Tar Creek OU 4 Boundary
- State Boundary
- Lower Spring River
- Beaver Creek
- Lytle Creek
- NHD Stream
- Beaver Creek Watershed
- Lost Creek Watershed
- Neosho River Watershed
- Lower Spring River Watershed
- Tar Creek Watershed

Notes:
Imagery Source: ESRI World Street Map online mapping service
NHD = National Hydrography Dataset

0 7,500 15,000 30,000 Feet

Figure 5-5.
Mussel Sample Locations
Tar Creek Superfund Site
Operable Unit 5 Remedial Investigation
Ottawa County, Oklahoma

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Appendixes

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Appendix A

Data Resource Log

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Appendix A. Data Resources Log

Tar Creek Superfund Site Operable Unit 5 Remedial Investigation

Ottawa County, Oklahoma

Item	Relevant Site or Location	Resource Title	Primary Author	Date	Media/Topic	Resource/ Data Utilized
USF WS	Tar Creek Superfund Site, Ottawa County, OK	Reconnaissance Assessment of Heavy Metals in the Clay Fraction of Sediments Downstream of the Tar Creek Superfund Site in Northeastern Oklahoma	Tribal Environmental Management Services, LLC	Apr-12	Sediment	Yes
2	Grand Lake O' The Cherokees, OK	Analysis of Heavy Metals (Pb, Zn, Cd) in Culturally Significant Plants Within the Grand Lake Watershed of Northeastern Oklahoma	Tribal Environmental Management Services, LLC	Sep-14	Fish and Biota	Yes
3	Beaver Creek, Ottawa County, OK	A Hydrological Study of Mine-Surface Water Distribution and Interactions in the Beaver Creek Watershed, Ottawa County, OK: Thesis	Alissa N. Sutter	2008	Mine Pool/Seep Discharge	Yes
4	Beaver Creek, Ottawa County, OK	Mussels as Passive Water Filters: Thesis	Dave Hensley	2007	Fish and Biota	Yes
5	Tar Creek Superfund Site, Ottawa County, OK	Thesis: Fate and Transport of Contaminants from Mining Waste Materials in Surface and Ground Water Environments	Julie Labar	2007	Sediment and Surface Water	Yes
6	Tar Creek Superfund Site OU5, Ottawa County, OK	Tar Creek OU5 Meeting: Summary Notes	Not specified	Jun-15	Other	No
7	Tar Creek Superfund Site, Ottawa County, OK	Evaluation of Fluvial Transport of Mining Waste in Reach of Tar Creek, Ottawa County, OK: Thesis	DANE M. MORRIS	2010	Surface Water	Yes
8	Tri-State Mining District (Missouri, Oklahoma, Kansas)	Development and Evaluation of Sediment and Pore-water Toxicity Thresholds to Support Sediment Quality Assessments in the Tri-State Mining District Missouri, Oklahoma, and Kansas - Volume I:Text	MacDonald, U.S. Geological Survey (USGS), CH2M	Feb-09	Sediment and Surface Water	Yes
9	Tri-State Mining District (Missouri, Oklahoma, Kansas)	Advanced Screening-level Ecological Risk Assessment for Aquatic Habitats within the Tri-State Mining District Oklahoma, Kansas, Missouri, Draft Final Technical Report	MacDonald, USGS, CH2M	May-10	Fish and Biota	Yes
10	Tri-State Mining District (Missouri, Oklahoma, Kansas)	Sediment Chemistry, Toxicity, and Bioaccumulation Data Report for the US Environmental Protection Agency - Department of the Interior Sampling of Metal-contaminated Sediment in the Tri-state Mining District in Missouri, Oklahoma, and Kansas (no SIR)	USGS, Columbia Missouri and MacDonald Environmental Sciences Ltd	Dec-08	Sediment	Yes
11	Tar Creek Superfund Site OU5, Ottawa County, OK	Remedial Act Contract - U.S. Environmental Protection Agency (EPA) Region 6, Integrated Site Assessment/Investigation Version 2.0	CH2M	Mar-12	Sediment and Surface Water	Yes
12	Jasper County Superfund Site, Jasper County, MO	Final Jasper County Superfund Site Baseline Ecological Risk Assessment (ERA), Jasper County, Missouri	Black and Veatch Special Projects Corp. 1998	1998	Exposure Scenarios/Health	No
13	Jasper County Superfund Site, Jasper County, MO	Area-Wide Human Health Risk Assessment for the Jasper County Superfund Site, Jasper County, MO	Missouri Department of Health, October 23, 1995	1995	Exposure Scenarios/Health	Yes
14	Baxter Springs/Treece Subsites, Cherokee County, KS	Final Ecological Risk Assessment for Cherokee County, Kansas, CERCLA Site - Baxter Springs/Treece Subsites	Dames and Moore. 1993	Mar-93	Fish and Biota	Yes
15	Northeast, OK	A Screening-level Assessment of Lead, Cadmium, and Zinc in Fish and Crayfish from Northeastern Oklahoma, USA	USGS	2006	Fish and Biota	Yes
16	Spring River Basin, Kansas, Missouri and Oklahoma, USA	Residual Effects of Lead and Zinc Mining on Freshwater Mussels in the Spring River Basin (Kansas, Missouri, and Oklahoma, USA). <i>Science of the Total Environment</i> 384:467-496.	Angelo, R.T., M.S. Cringan, D.L. Chamberlain, A.J. Stahl, S.G. Haslouer, and C.A.Goodrich. 2007	2007	Fish and Biota	Yes

Appendix A. Data Resources Log*Tar Creek Superfund Site Operable Unit 5 Remedial Investigation**Ottawa County, Oklahoma*

Item	Relevant Site or Location	Resource Title	Primary Author	Date	Media/Topic	Resource/ Data Utilized
17	Jasper and Newton Counties, MO	Damage Assessment Plan for Jasper and Newton Counties, Missouri. 2009. State of Missouri, Department of Natural Resources, U.S. Fish and Wildlife Service (USFWS), and U.S. Department of the Interior	Industrial Economics, Inc.	Jun-09	Exposure Scenarios/Health	No
18	Ottawa County, OK	Stream Flow, Water Quality, and Metal Loads from Chat Leachate and Mine Outflow into Tar Creek, Ottawa County Oklahoma, 2005 (SIR 2007-5115)	USGS	2005	Surface Water	Yes
20	Tar Creek, Ottawa County, OK	Surface-water Chemistry and Sediment Chemistry Data Collected Between 2005 and 2007 within the Tar Creek Basin, Unpublished Data	HSPH (Harvard School of Public Health), Harvard University, Cambridge, Massachusetts	2009	Sediment and Surface Water	Unable to Obtain Resource
21	Tar Creek, Ottawa County, OK	Sources and Fates of Heavy Metals in a Mining-impacted Stream: Temporal Variability and the Role of Iron Oxides	Laurel A. Schaider, David B. Senn	Jun-14	Surface Water	Yes
22	Tri-State Mining District (Missouri, Oklahoma, Kansas)	Tribal Overview Tar Creek Superfund, Tri-State Mining District Forum - PowerPoint Slides	Tribal Environmental Management Services, LLC	Apr-05	Other	Yes
23	Tar Creek, Ottawa County, OK	Risk Document: Onions and Asparagus; Root Plants; Ceremonial Uses and Gathering Techniques, waiting on submittal	Quapaw Tribal	-	Fish and Biota	Unable to Obtain Resource
24	Cherokee County Superfund Site, KS	CD of tribal life ways	Cherokee nation	-	Other	Unable to Obtain Resource
25	Tar Creek, Ottawa County, OK	Quapaw Tribe of Oklahoma Surface Water Quality Data	STORET	2003-2009/2009-2016	Raw Data	Yes
26	Tar Creek, Ottawa County, OK	Wyandotte Nation of Oklahoma CWA Section 106 Grants	STORET	2004-2016	Raw Data	Yes
27	Tar Creek, Ottawa County, OK	Eastern Shawnee Tribe of Oklahoma CWA Section 106 Grants	STORET	2001-2016	Raw Data	Yes
28	Tar Creek, Ottawa County, OK	Watershed Plan Report for Tar Creek OU4: Tech Memo	CH2M	Sep-09	Surface Water	Yes
29	Tar Creek Superfund Site, including Grand Lake	Fish Consumption Guide For the Tar Creek Area Including Grand Lake - Fact Sheet	Oklahoma Department of Environmental Quality (ODEQ)	Sep-08	Fish and Biota	Yes
30	Tar Creek Superfund Site and Neosho Rivers, OK	DEQ Discourages Eating Whole Fish from Tar Creek Area: Fish Fillets Are Safe - News Release	ODEQ	Jul-03	Fish and Biota	Yes
31	Tri-State Mining District (Missouri, Oklahoma, Kansas)	Fish Tissue Metals Analysis in the Tri-State Mining Area, FY2003, Final Report	ODEQ	2003	Fish and Biota	Yes
32	Tri-State Mining District (Missouri, Oklahoma, Kansas)	Fish Tissue Metals Analysis in the Tri-State Mining Area Follow-up Study, Final Report	ODEQ	2006	Fish and Biota	Yes
33	Midnite Mine Superfund Site	The Spokane Tribe's Multipathway Subsistence Exposure Scenario and Screening Level RME	Barbara L. Harper, Brian Flett, Stuart Harris, Corn Abeyta, Fred Kirschner	2002	Other	Yes
34	Grand-Neosho River Basin, Northeastern Oklahoma	Surface-Water Quality in the Grand-Neosho River Basin, Northeastern Oklahoma, Draft Final Report, 2005-2006	ODEQ	Oct-08	Surface Water	Yes

Appendix A. Data Resources Log

Tar Creek Superfund Site Operable Unit 5 Remedial Investigation

Ottawa County, Oklahoma

Item	Relevant Site or Location	Resource Title	Primary Author	Date	Media/Topic	Resource/ Data Utilized
35	Grand Lake O' The Cherokees, OK	Occurrence and Trends of Selected Chemical Constituents in Bottom Sediment, Grand Lake O' the Cherokees, Northeast Oklahoma, 1940–2008 (SIR 2009-5258)	USGS in cooperation with the USFWS	2009	Sediment	Yes
36	Tri-State Mining District (Missouri, Oklahoma, Kansas)	Selected Metals in Sediments and Streams in the Oklahoma Part of the Tri-State Mining District, 2000–2006 (SIR 2009-5032)	USGS	2009	Sediment and Surface Water	Yes
37	Tri-State Mining District (Missouri, Oklahoma, Kansas)	Importance Of Tribal Resources To Tribal Members And Damages In The TSMD, Tri-State 2009 Watershed Group Workshop, Power Point Presentation	Meredith Garvin, Tribal Environmental Management Services	Oct-09	Other	Yes
38	Tar Creek Superfund Site OU4, Ottawa County, OK	Draft Feasibility Study Report Tar Creek OU4 RI/FS Program	AATA International, Inc.	Dec-05	Sediment and Surface Water	No
39	Tri-State Mining District (Missouri, Oklahoma, Kansas)	Tar Creek Hydrologic Study, Tri-State Mining District, Power Point Presentation	Tri-State Mining Distract	2009 Oct-09	Mine Pool/Seep Discharge	Yes
40	Tri-State Mining District (Missouri, Oklahoma, Kansas)	Assessment Of The Spatial Distribution Of Selected Metals Concentrations In Stream Sediment Within the TSMD, Power Point Presentation for "Selected Metals in Sediments and Streams in the Oklahoma Part of the Tri-State Mining District, 2000–2006 (SIR 2009-5032)"	USGS	2007	Sediment	Yes
41	Region 7, KS	Overview Of The Spring River Floodplain Sampling Activities In Kansas, Power Point Presentation	Dave Drake	Oct-09	Sediment	No
42	Guidance	Frequently Asked Questions About Ecological Revitalization of Superfund Sites - Fact Sheet	EPA	Dec-06	Fish and Biota	No
43	Picher, Ottawa County, OK	Water Quality Characteristics Of Seepage and Runoff At Two Tailings Piles In The Picher Field Ottawa County, Oklahoma	Oklahoma Water Resources Board (OWRB)	Mar-83	Mine Pool/Seep Discharge	Yes
44	Tar Creek Superfund Site, Ottawa County, OK	Residential Remedial Investigation Report For Remedial Investigation Feasibility Study Final, Tar Creek Superfund Site, Ottawa County, OK	Brown and Root Environmental	Jan-97	Exposure Scenarios/Health	No
45	Tri-State Mining District (Missouri, Oklahoma, Kansas)	Candidate Assessment Endpoints Risk Question And Measurement Endpoints For A Baseline Ecological Risk Assessment	MESL, USGS, CH2M	Apr-07	Fish and Biota	No
46	Tar Creek Superfund Site, Ottawa County, OK	Summary Report Of Washed And Unwashed Mine Tailings (Chat) From The Tar Creek Superfund Site Area	ODEQ	May-00	Other	Yes
47	Tri-State Mining District (Missouri, Oklahoma, Kansas)	Overview Of The 2007 Sediment Sampling Program For The TSMD - Presentation, Power Point Presentation	MacDonald, Smorong, Pehrman, Ingersoll, Jackson, Muirhead, Irving, McCarthy	Oct-08	Sediment	No
48	Tri-State Mining District (Missouri, Oklahoma, Kansas)	Development of Toxicity Thresholds for Assessing Risks to Sediment-Dwelling Organisms, Power Point Presentation	MacDonald, Ingersoll, Besser, Smorong, Brumbaugh, May, Meyer, Doolan, Irving, O'Hare	Oct-08	Sediment	Yes
49	Tar Creek and Lower Spring River	Tar Creek And Lower Spring River Watershed Management Plan - Reconnaissance Phase Draft	U.S. Army Corps of Engineers (USACE)	Aug-04	Surface Water	Yes
50	Coeur d'Alene River Basin	Superfund And Mining Megasites - Lessons From The Coeur d'Alene River Basin	National Research Council of the National Academies	Jul-05	Other	No
51	Cherokee County Superfund Site, KS	Fact Sheet Mine Waste, EPA Region 7	EPA	Feb-03	Other	Yes
52	Grand Lake O' The Cherokees, OK	Comprehensive Study Of The Grand Lake Watershed - Final Report	Office of the Secretary of the Environment	Dec-05	Surface Water	Yes

Appendix A. Data Resources Log
Tar Creek Superfund Site Operable Unit 5 Remedial Investigation
Ottawa County, Oklahoma

Item	Relevant Site or Location	Resource Title	Primary Author	Date	Media/Topic	Resource/ Data Utilized
53	Region 7, KS	Framework for the Ecological Assessment of Impacted Sediments at Mining Sites in Region 7, Power Point Presentation	Gunter and Madden	Mar-05	Sediment	No
54	Jasper County, MO	Demonstration of Subaqueous Disposal Of Mill Waste, Power Point Presentation	EPA, NewFields, ATT, Sunoco and Jasper County Group	Apr-05	Sediment and Surface Water	No
55	Tri-State Mining District (Missouri, Oklahoma, Kansas)	Development and Application Of Empirically-Derived Sediment Quality Guidelines, Power Point Presentation (no SIR)	USGS, MESL	Apr-05	Sediment	No
56	East Kenoyer Site Picher, OK	Final Environmental Assessment - Tar Creek Demonstration Plan for Land Reclamation at the East Kenoyer Site, Picher Oklahoma	USACE	Apr-05	Fish and Biota	Yes
57	Tar Creek Superfund Site, Ottawa County, OK	Summary Report And Water Quality Analyses For The McNeely-Green Monitoring Well	ODEQ	Feb-05	Surface Water	Yes
58	Picher, Ottawa County, OK	Picher Mining Field, Northeast Oklahoma, Subsidence Evaluation Report	Subsidence Evaluation Team	Jan-06	Other	Yes
59	Tar Creek, Ottawa County, OK	Plant and Associated Soil Data	CH2M	Nov-05	Fish and Biota	Yes
60	Spring River and Empire Lake, TC Systems, Cherokee County, KS	Assessment Of Trace Elements In Sediment In The Spring River/Empire Lake And Tar Creek Systems Cherokee County Kansas, Power Point Presentation for "Assessment of Contaminated Streambed Sediment in the Kansas Part of the Historic Tri-State Lead and Zinc Mining District, Cherokee County, 2004 (SIR 2005-5251)"	USGS	Mar-05	Sediment and Surface Water	Yes
61	Town Verona, Dane County, WI	Quantifying Decreases In Stormwater Runoff From Deep Tilling-Chisel Plowing And Compost-Amendment	Balousek	2003	Sediment and Surface Water	No
62	Ottawa County, OK	Metals In Surface Water And Sediment In The Neosho And Spring River Basins - 2000 and 2002, Power Point Presentation (no SIR)	USGS, Quapaw, Seneca-Cayuga Tribes	May-03	Sediment and Surface Water	No
63	Tar Creek Superfund Site, Ottawa County, OK	Preliminary Groundwater Flow Model of the Boone Formation At The Tar Creek Superfund Site, Oklahoma and Kansas, With Simulations of Selected Potential Remediation Scenarios - DRAFT	Reed and Czarnecki, EPA	2005	Surface Water	Yes
64	Tar Creek, Ottawa County, OK	Biota Data and Summary	CH2M	Oct-05	Fish and Biota	Yes
65	Tar Creek Superfund Site, Ottawa County, OK	Sampling And Metal Analysis Of Chat Piles In The Tar Creek Superfund Site	Datin, Cates	Apr-02	Sediment	Yes
66	Tar Creek, Ottawa County, OK	Draft Final Human Health Risk Assessment Tar Creek Superfund Site Operable Unit No. 4 Ottawa County, Oklahoma	CH2M	Feb-06	Exposure Scenarios/Health	Yes
67	Ottawa County, OK	Tar Creek Mill Residue Database	AATA International, Inc.	2016	Raw Data	No
68	Tri-State Mining District (Missouri, Oklahoma, Kansas)	TMD May 2006 Investigation	Black and Veatch; CH2M	2006	Raw Data	Yes
69	Guidance	Guidance Document For The Development Of Site-Specific Water Quality Criteria For Metals	OWRB	2003	Surface Water	No
70	Guidance	A Guidance Manual To Support The Assessment Of Contaminated Sediments In Freshwater Ecosystems_Volume1 - An Ecosystem-Based Framework For Assessing And Managing Contaminated Sediments	MESL, USGS, Sustainable Fisheries Foundation 2002	Dec-02	Sediment and Surface Water	No
71	Guidance	A Guidance Manual To Support The Assessment Of Contaminated Sediments In Freshwater Ecosystems_Volume2 - Design And Implementation Of Sediment Quality Investigations	MESL, USGS, Sustainable Fisheries Foundation 2002	Dec-02	Sediment and Surface Water	No

Appendix A. Data Resources Log*Tar Creek Superfund Site Operable Unit 5 Remedial Investigation**Ottawa County, Oklahoma*

Item	Relevant Site or Location	Resource Title	Primary Author	Date	Media/Topic	Resource/ Data Utilized
72	Guidance	A Guidance Manual To Support The Assessment Of Contaminated Sediments In Freshwater Ecosystems_Volume 3 - Interpretation Of The Results Of Sediment Quality Investigations	MESL, USGS, Sustainable Fisheries Foundation 2002	Dec-02	Sediment and Surface Water	No
73	Tri-State Mining District (Missouri, Oklahoma, Kansas)	Evaluation of the Matching Sediment Chemistry and Sediment Toxicity in the Tri-State Mining District (TSMD), Missouri, Oklahoma, and Kansas	MESL, USGS, CH2M	Aug-08	Sediment and Surface Water	No
74	Kansas	2013 Kansas Environment Report	Kansas Dept. of Health and Environment	2013	Sediment and Surface Water	No
75	Tar Creek Superfund Site OU5, Ottawa County, OK	350059_TCOU5 WPA1 Property DataBase_03-07-07	CH2M	2007	Raw Data	No
76	Basin Boulder Districts, MT	Aquatic Health And Exposure Pathways Of Trace Elements	Farag, Nimick, Kimball, Church, Skaar, Brumbaugh, Hogstrand, and MacConnell	Mar-05	Sediment and Surface Water	No
77	Kansas	Division of Environment Quality Management Plan: Part III - Fish Tissue Contaminant Monitoring Program Quality Assurance Management Plan, Revision 2	Kansas Dept. of Health and Environment	Jan-13	Fish and Biota	No
78	Ottawa County, OK	Public Health Assessment For Occurrence Of Selected Health Conditions In Ottawa County, Oklahoma	ATSDR	Sep-08	Exposure Scenarios/Health	No
79	Tar Creek Superfund Site, Ottawa County, OK	Report To Congress	ATSDR	Oct-04	Exposure Scenarios/Health	No
80	Guidance	Toxicological Profile For Cadmium	U.S. Department of Health and Human Service, Public Health Service, Agency for Toxic Substances and Disease Registry	Sep-12	Exposure Scenarios/Health	Yes
81	Guidance	Toxicological References For Chromium	U.S. Department of Health and Human Service, Public Health Service, Agency for Toxic Substances and Disease Registry	Sep-12	Exposure Scenarios/Health	No
82	Guidance	Toxicological Profile For Lead	U.S. Department of Health and Human Service, Public Health Service, Agency for Toxic Substances and Disease Registry	Aug-07	Exposure Scenarios/Health	Yes
83	Guidance	Toxicological Profile For Zinc	U.S. Department of Health and Human Service, Public Health Service, Agency for Toxic Substances and Disease Registry	Aug-05	Exposure Scenarios/Health	Yes
84	Cherokee County Superfund Site, KS	Five-Year Review Report, Fourth Five-Year Review Report For The Cherokee County Superfund Site Cherokee County Kansas	EPA	Sep-10	Sediment and Surface Water	No
85	Tri-State Mining District (Missouri, Oklahoma, Kansas)	EPA Region 7 Cherokee County Site Details May 2012	EPA	May-12	Sediment and Surface Water	No

Appendix A. Data Resources Log

Tar Creek Superfund Site Operable Unit 5 Remedial Investigation

Ottawa County, Oklahoma

Item	Relevant Site or Location	Resource Title	Primary Author	Date	Media/Topic	Resource/ Data Utilized
86	Kansas	Division of Environment Quality Management Plan, Part III - Stream Biological Monitoring Program, Quality Assurance Management Plan, Revision 4	Kansas Dept. of Health and Environment	Dec-12	Fish and Biota	Yes
87	Kansas	Division of Environment Quality, Part III: Stream Chemistry Monitoring Program Quality Assurance Management Plan, Revision 3	Kansas Dept. of Health and Environment	Mar-14	Surface Water	No
88	Kansas	Division of Environment Quality, Part III: Sub - Watershed Water Quality Monitoring Program Quality Assurance Management Plan, Revision 1	Kansas Dept. of Health and Environment	Mar-14	Surface Water	No
89	Kansas	Division of Environment Quality, Part III: Watershed Management Section Quality Assurance Management Plan, Revision 11	Kansas Dept. of Health and Environment	Dec-14	Surface Water	No
90	Kansas	Division of Environment Quality, Part III: Watershed Planning And Standards Unit Quality Assurance Management Plan, Revision 8	Kansas Dept. of Health and Environment	Mar-15	Surface Water	No
91	Guidance	Public Law 95-87, Surface Mining Control and Reclamation Act of 1977	U.S. Code	Aug-77 - Jul-12	Other	No
92	Boulder River	Synthesis Of Water Sediment And Biological Data Hazard Quotients To Access Ecosystem Health	Finger, Farag, Nimick, Church, Sole	Mar-05	Sediment and Surface Water	No
93	Guidance	Title 30 - Mineral Lands and Mining, Chapter 25 - Surface Mining Control and Reclamation	USCODE	Unspecified	Other	No
94	Guidance	Guidance Document: Decision Making At Contaminated Sites - Issues And Options In Human Health Risk Assessment	The Interstate Technology And Regulatory Council Risk Assessment Team	Jan-15	Exposure Scenarios/Health	No
95	Tri-State Mining District (Missouri, Oklahoma, Kansas)	Development and Evaluation of Sediment and Pore-Water Toxicity Thresholds to Support Sediment Quality Assessments in the Tri-State Mining District (TSMD), Missouri, Oklahoma, and Kansas - Volume II: Appendices 1 through 4	MESL, USGS, CH2M	Feb-09	Sediment and Surface Water	No
96	Tri-State Mining District (Missouri, Oklahoma, Kansas)	Effects OF Mining-Derived Metals On Riffle-Dwelling Crayfish In SW Missouri And SE Kansas Of The TSMD USA (no SIR)	USGS, Missouri Dept. of Conservation 2011	Aug-11	Fish and Biota	No
97	Tri-State Mining District (Missouri, Oklahoma, Kansas)	Adverse Health Effects In Canada Geese (<i>Branta canadensis</i>) Associated With Waste From Zinc And Lead Mines In The TSMD	Merwe, Carpenter, Nietfeld	Not Specified	Fish and Biota	Yes
98	Spring River, Tri-State Mining District, Southwest MO	Effects Of Lead-Zinc Mining On Crayfish Density In The Spring River Watershed In SW Missouri TSMD	CERC	Oct-08	Fish and Biota	No
99	Tri-State Mining District (Missouri, Oklahoma, Kansas)	Sampling Analysis Plan and Quality Assurance Project Plan for a Pilot Study To Assess Volume Of Mine Waste And Concentration Of Selected Metals In Stream A Floodplain Sediments within the TSMD in Kansas, Missouri, and Oklahoma (no SIR)	USGS	May-11	Sediment and Surface Water	No
100	Big River Mine Tailings Superfund Site, St. Francois County and Viburnum Trend Site, Reynolds, Crawford, Washington, and Iron Counties	Final Phase I Damage Assessment Plan for Southeast Missouri Lead Mining District: Big River Mine Tailings Superfund Site, St. Francois County and Viburnum Trend Sites, Reynolds, Crawford, Washington, and Iron Counties	Mosby, Weber, Klahr	Jan-09	Exposure Scenarios/Health	No
101	Tar Creek, Ottawa County, OK	Draft: Remedial Investigation Report, Tar Creek OU4 RI/FS Program	AATA INTERNATIONAL, INC.	Dec-05	Exposure Scenarios/Health	Yes
102	Tar Creek, Ottawa County, OK	Final: Data Gap Analysis Report, RI/FS Program	AATA INTERNATIONAL, INC.	Sep-04	Raw Data	Yes

Appendix A. Data Resources Log

Tar Creek Superfund Site Operable Unit 5 Remedial Investigation

Ottawa County, Oklahoma

Item	Relevant Site or Location	Resource Title	Primary Author	Date	Media/Topic	Resource/ Data Utilized
103	Leviathan Mine Superfund Site, NV-CA	Washoe Tribe Human Health Risk Assessment Exposure Scenario for the Leviathan Mine Superfund Site	Dr. Barbara Harper, DABT and AESE, Inc.	Mar-05	Exposure Scenarios/Health	No
104	Ottawa County, OK	Site Characterization Report: Sediments, Surface Water, and Vegetation of Tar Creek, Lytle Creek, and Beaver Creek, Oklahoma	F.E. Kirschner, AESE, Inc.	Jan-08	Sediment and Surface Water	Yes
105	Quapaw, OK	Quapaw Traditional Lifeways Scenario	Dr. Barbara Harper, DABT and AESE, Inc.	2008	Exposure Scenarios/Health	Yes
106	Guidance	Subsistence Exposure Scenarios For Tribal Applications	Taylor and Francis Group, LLC; B. Harper	Jul-12	Exposure Scenarios/Health	Yes
107	Empire Lake, Cherokee County, KS	Sedimentation and Occurrence and Trends Of Selected Chemical Constituents In Bottom Sediment, Empire Lake, Cherokee County, Kansas, 1905-2005	Kyle E. Juracek	2006	Sediment	Yes
108	Jasper County Superfund Site, Jasper County, MO	Risk Management Considerations For Terrestrial Vermivores	NewFields	Oct-00	Fish and Biota	Yes
109	Tar Creek Superfund Site, Ottawa County, OK	Toxicity Assessment Of Metal Concentration In Chat-Impacted Pasture Grass At CB150 -Imbeau Weiss	NewFields - Sitler, Hinrichs	Aug-13	Fish and Biota	Yes
110	Guidance	Rhizoremediation - A Pragmatic Approach For Remediation Of Heavy Metal-Contaminated Soil	Velmurugan Ganesan	2012	Fish and Biota	Yes
111	Ozark Plateaus Aquifer System	Groundwater-Flow Model Of The Ozark Plateaus Aquifer System- Northwestern Arkansas, Southeastern Kansas, Southwestern Missouri, And Northeastern Oklahoma	Kansas Water Office, US Dept. of the Interior, USGS	Mar-10	Surface Water	Yes
112	Cherokee County Superfund Site, KS	Draft Ecological Preliminary Remediation Goals Cherokee County Superfund Site	Venessa Madden	Jul-06	Fish and Biota	Yes
113	Northeast, OK	Heavy Metals in Fluvial Sediments of the Picher Mining Field, Northeast Oklahoma, Thesis	Randa Noelle Hope	1999	Sediment	No
114	Cherokee County, KS	Occurrence and Variability Of Mining-Related Lead and Zinc In The Spring River Flood Plain and Tributary Flood Plains, Cherokee County, Kansas, 2009-11 (SIR 2013-5028)	USGS, EPA	2013	Sediment and Surface Water	Yes
115	Tar Creek, Ottawa County, OK	Risk Evaluation Of Consumption Of Beef And Milk Taken From Cows Raised On A Contaminated Area At The TC Superfund Site	Ghassan A. Khoury	Mar-04	Fish and Biota	Yes
116	Empire Lake, Cherokee County, KS	Sediment Storage and Severity of Contamination in a Shallow Reservoir Affected by Historical Lead and Zinc Mining	Kyle E. Juracek	2007	Sediment	No
117	Northeast, OK	Concentration of Cadmium, Lead, and Zinc in Fish from Mining-Influenced Waters of Northeastern Oklahoma: Sampling of Blood, Carcass, and Liver for Aquatic Biomonitoring	Brumbaugh, W.G., Schmitt, C.J., and May, T.W.	2005	Fish and Biota	Yes
118	Tar Creek, Ottawa County, OK	Chemical Analyses of Stream Sediment in the Tar Creek Basin of the Picher Mining Area, Northeast Oklahoma	D.L Parkhurst	1988	Sediment	Yes
119	Tar Creek, Ottawa County, OK	Tar Creek Field Investigation, Task1.1; Effects of Acid Mine Discharge on the Surface Water Resources in the Tar Creek Area, Ottawa County, Oklahoma	OWRB	1983	Surface Water	Yes
120	Tar Creek, Ottawa County, OK	An Environmental Health Evaluation of the Tar Creek Area	Tar Creek Task Force	1983	Exposure Scenarios/Health	Yes
121	Tar Creek, Ottawa County, OK	Native American Issues Final Report	Native American Issues Subcommittee	Unspecified	Exposure Scenarios/Health	No
122	Alberta, Canada	Soil Ingestion Rate Determination in a Rural Population of Alberta, Canada Practicing a Wilderness Lifestyle	G. Irvine, J.R. Doyle, P.A.White, J.M. Blais	2013	Exposure Scenarios/Health	No

Appendix A. Data Resources Log

Tar Creek Superfund Site Operable Unit 5 Remedial Investigation

Ottawa County, Oklahoma

Item	Relevant Site or Location	Resource Title	Primary Author	Date	Media/Topic	Resource/ Data Utilized
123	Cariboo Forest Region, British Columbia	A Soil Ingestion Pilot Study of a Population Following a Traditional Lifestyle Typical of Rural or Wilderness Areas	J.R. Doyle, J.M. Blais, R.D. Holmes, P.A. White	2012	Exposure Scenarios/Health	No
124	Cherokee County Superfund Site, KS	Cherokee County Superfund Site Operable Unit 4-Treece Remediation of Tar Creek and Adjacent Mine Waste Areas, Power Point Presentation	EPA	2014	Surface Water	Yes
125	Cherokee County, KS	Cherokee County Supplemental Sampling Data 0603015	EPA	2015	Raw Data	Yes
126	Cherokee County, KS	Cherokee County Supplemental Sampling Data Map 03142016	EPA	2016	Raw Data	Yes
127	Tar Creek, Ottawa County, OK	Hydrogeologic Characterization Study Report, Final- Tar Creek Superfund Site Operable Unit 4 Ottawa County, Oklahoma	CH2M	2010	Other	Yes
128	Tar Creek, Ottawa County, OK	The Challenge Posed to Children's Health by Mixture of Toxic Waste: the Tar Creek Superfund Site as a Case Study	Howard Hu, M.D., M.P.H., Sc.D., James Shine, Ph.D., and Robert O. Wright, M.D., M.P.H.	2007	Exposure Scenarios/Health	No
129	Tri-State Mining District (Missouri, Oklahoma, Kansas)	Zinc and Lead Poisoning in Wild Birds in the Tri-State Mining District (Oklahoma, Kansas, and Missouri)	W. N. Beyer, J. Dalgarn, S. Dudding, J. B. French, R. Mateo, J. Miesner, L. Sileo, J. Spann	2004	Fish and Biota	Yes
130	Grand Lake O' The Cherokees, OK	Grand Lake Watershed Plan	Grand Lake O' the Cherokees Watershed Alliance Foundation, Inc.	2008	Surface Water	Yes
131	Tri-State Mining District (Missouri, Oklahoma, Kansas)	Gravel Bar Core and Sample Locations, Depth of Water from the Surface, and Maximum Sample Depth at Each Location for Center Creek, Shoal Creek, Spring River, Tar Creek, and Turkey Creek in the Tri-State Mining District, 2011-2013 - Incomplete (no SIR)	USGS	2011-2013	Raw Data	Yes
132	Tar Creek, Ottawa County, OK	Ottawa Tribe of Oklahoma Surface Water Data	STORET	2006- 2016	Raw Data	Yes
133	Tar Creek, Ottawa County, OK	Seneca-Cayuga Tribe of Oklahoma CWA Section 106 Grants	STORET	2016	Raw Data	Yes
134	Tar Creek, Ottawa County, OK	Miami Tribe of Oklahoma CWA Section 106 Grants	STORET	2009- 2016	Raw Data	Yes
135	Tar Creek, Ottawa County, OK	Public Health Assessment for Occurrence of Selected Health Conditions in Ottawa County, Oklahoma, Report and Fact Sheet	ATSDR	Sep-08	Exposure Scenarios/Health	No
136	Tar Creek, Ottawa County, OK	Oklahoma Water Resources Board Water Quality Database for Neosho and Spring River Surface Water Data 1998-2015	OWRB	2016	Raw Data	Yes
137	Guidance	Comparability of Suspended-Sediment Concentration and Total Suspended Solids Data (WRIR 00-4191)	USGS	Aug-00	Surface Water	Yes
138	Guidance	National Field Manual for the Collection of Water-Quality Data (no SIR)	USGS	2014	Surface Water	Yes
139	Ottawa County, OK	Fifth Five-Year Review Report for The Tar Creek Superfund Site Ottawa County, Oklahoma	EPA	Sep- 15	Sediment and Surface Water	Yes
140	Tri-State Mining District (Missouri, Oklahoma, Kansas)	Assessment of Contaminated Streambed Sediment in the Kansas Part of the Historic Tri-State Lead and Zinc Mining District Cherokee County, 2004	USGS, Larry Pope	2005	Sediment	Yes
141	Tar Creek, Ottawa County, OK	Final - Partial Restoration Plan and Environmental Assessment: Addressing Injuries to Migratory Birds and Threatened and Endangered Species at the Tar Creek Superfund Site, Ottawa County, Oklahoma	U.S. Fish and Wildlife Services	Jun-00	Surface Water	Yes
142	Miami, OK	Miami Water Quality Monitoring Program Data	STORET	2016	Raw Data	Yes

Appendix A. Data Resources Log*Tar Creek Superfund Site Operable Unit 5 Remedial Investigation**Ottawa County, Oklahoma*

Item	Relevant Site or Location	Resource Title	Primary Author	Date	Media/Topic	Resource/ Data Utilized
143	Ottawa County, OK	OU Surface Water Results	Nairn, Robert W., University of Oklahoma	2004-2016	Raw Data	Yes
144	North America	Ecological Regions of North America: Poster	EPA	2006	Other	Yes
145	Oklahoma and Ottawa County	Ecoregions of Oklahoma: Poster	Woods, A.J., Omerik, J.M., Butler, D.R., Ford, J.G., Henley, J.E., Hoagland, B.W., Arndt, D.S., and Moran, B.C.	2005	Other	Yes
146	Ottawa County, OK	The Climate of Ottawa County	Oklahoma Climatological Survey	2004	Other	Yes
147	Ottawa County, OK	Characterization of Chat Leachate and Mine Discharge Into Tar Creek Ottawa County Oklahoma-Draft (SIR is not provided since this is a draft report)	USGS, Cope and Becker	Nov-05	Mine Pool/Seep Discharge	Yes

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Appendix B

Attachment 1 to the Technical
Memorandum: Process and Criteria
for Determining Analytical Data
Usability for the Tar Creek Operable
Unit 5 Remedial Investigation and
Human Health Risk Assessment

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Attachment 1: Assessment Criteria for Review of Existing Data

Many data collection efforts have been conducted in the site study area over the years. In order to maximize the use of existing data, the usability of available data and reports for the remedial investigation (RI) and baseline human health risk assessment (HHRA) will be evaluated. Various EPA guidance documents are available that address approaches for evaluating existing data for use in site evaluations and risk assessments. EPA guidance (2002) indicates that the criteria for accepting existing information (called acceptance or performance criteria) should be tailored to the type of information under consideration based on the principle of a “graded approach,” in which the level of quality assurance applied to the information is commensurate with the intended use of the information and the degree of confidence necessary in that information.

EPA guidance (2012) provides an approach for assessing existing scientific and technical information using five general assessment factors: Soundness, Applicability and Utility, Clarity and Completeness, Uncertainty and Variability, and Evaluation and Review, defined as indicated below.

1. Soundness - The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.
2. Applicability and Utility - The extent to which the information is relevant for the Agency’s intended use.
3. Clarity and Completeness - The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.
4. Uncertainty and Variability - The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.
5. Evaluation and Review - The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.

Based on EPA guidance referenced above, a series of questions has been prepared and compiled into a checklist for use in reviewing each existing dataset or document. Data which are found to be acceptable will be compiled in a project database and used in support of the Tar Creek Operable Unit 5 RI site characterization and/or HHRA.

Data Quality Objectives for Review of Existing Data

After existing data and studies are reviewed and evaluated (using the assessment factors on the attached checklist), a data gap evaluation will be performed. If significant data gaps are identified that need to be filled prior to preparing the RI Report and HHRA, a Quality Assurance Project Plan (QAPP) will be prepared, including development of data quality objectives (DQOs). Typically, *the DQO process is used to generate performance criteria for the collection of new data*. In general, *performance criteria* represent the full set of specifications that are needed to design a data or information collection effort such that they, when implemented, generate *newly-collected data* that are of sufficient quality and quantity to address the project’s goals (EPA, 2002). The DQOs will be developed specific to the data needed to fill the critical data gaps identified (if any).

Works Cited

U. S. Environmental Protection Agency (EPA), 2002. *Guidance for Quality Assurance Project Plans*. EPA QA/G-5. Office of Environmental Information. EPA/240/R-02/009. December.

U. S. Environmental Protection Agency (EPA), 2012. *Guidance for Evaluating and Documenting the Quality of Existing Scientific and Technical Information, Addendum to: A Summary of General Assessment Factors for Evaluating the Quality of Scientific and Technical Information*. EPA Science and Technology Policy Council. December.

Checklist for Assessment of Existing Information

DRAFT

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document		
		Agency/Author		
		Publication ID		
		Publisher		
		Year Published		
		Data format (Excel, Access, Word, PDF, etc.)		
Criteria		Yes	No	No but justification why still usable
AF 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were only EPA-approved analytical methods used?			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals].)			
	Were the samples collected within the last 10 years?			
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Four Mile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).			
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			
	If the data is biota, was it collected from fish, shellfish, aquatic plants, or aquatic mammals that are ingested or used by humans?			
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?			
	Are specific sampling locations identified?			
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			
	Are all data qualifiers clearly defined?			
	Was the data collected under an approved QAPP?			
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			
	Is the data considered valid for use (i.e., the data was not rejected during validation)?			
	If the data were not validated, is there sufficient data present to perform a validation if needed?			
	Overall Conclusions Based on Above Rationale	RI	HHRA	Both
	Conclusion - Data are usable for what purpose?			

AF = assessment factor

Appendix C

Response to Stakeholder Comments

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Table 1. Quapaw Tribe, 01/25/16

Document Title: Data Resources Log

Date of Subject Document: 09/22/15

Item	Section	Page	Comment	CH2M HILL Response
1	-	-	The tribe proposed a revision to the file: TCOU5RI Data Resources Log_2015-0922.xlsx. The revision includes an additional column identifying the discipline which developed the particular data set (e.g. ERA = ecological risk assessors; HHRA = human health risk assessors; hydrogeologists = Physical Scientists/Contaminant Transport and Fate Specialists; and UNK = unknown).	Comment noted. Clarification was provided to Quapaw Tribe and their consultants that OU5 did not include an ecological risk assessment.

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Table 2. ODEQ, 02/02/16

Document Title: Data Resources Log

Date of Subject Document: 09/22/15

Item	Section	Page	Comment	CH2M HILL Response
1	-	-	ODEQ acknowledged all previous inputs were incorporated. ODEQ also acknowledges that Dr. Nairn has outstanding data.	Comment noted.

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Table 3. Quapaw Tribe, 01/25/16

Document Title: Process and Criteria for Determining Analytical Data Usability for the Tar Creek Operable Unit 5

Redial Investigation and Human Health Risk Assessment Tech Memo

Date of Subject Document: 12/09/15

Item	Section	Page	Comment	CH2M HILL Response
1	-	-	<p>The tribe commented that the procedure outlined in the Technical Memorandum (TM) is not in logical order nor is it based on the scientific process or the NCP. This TM poorly describes a site-specific DQO <i>process</i>, and does not attempt to develop DQOs themselves.</p> <p>At least four different end-users from four different disciplines will rely on data generated for each medium:</p> <ul style="list-style-type: none"> Physical Scientists/Contaminant Transport and Fate Specialists Ecological Risk Assessors Human Health Risk Assessors Remedial Design Specialists <p>Each end user will have different DQOs for each study. The Quapaw Tribe comments that the DQOs include objectives and decisions are the “rules for the RI/FS” and must be stated and agreed upon by practitioners of the participating governments, prior to attempting to propose work. As such the current draft makes unfounded, premature, judgments on the quality and usability of the data.</p> <p>The Work Plan for the HHRA and the BERA should be drafted by risk assessors following RAGS and ERAGs and should develop the specifications required to provide a reasonably reliable baseline HHRA (e.g. UCL95 (COI,x,y,z,t) for each exposure area). Qualified personnel in other disciplines should use these specifications to determine if existing data can be used to meet their needs as well. If existing data do not meet the specifications, experts within each discipline will develop the necessary studies to fill the data gaps</p>	<p>Comment acknowledged and accommodated. An updated version of the tech memo was produced with an attachment that included an assessment criteria for review of existing data in the form of a checklist.</p>

Table 3. Quapaw Tribe, 01/25/16

Document Title: Process and Criteria for Determining Analytical Data Usability for the Tar Creek Operable Unit 5

Redial Investigation and Human Health Risk Assessment Tech Memo

Date of Subject Document: 12/09/15

Item	Section	Page	Comment	CH2M HILL Response
2	1.2 Paragra ph 1	2	<p>1. This report should not be intended to describe process. Process is already defined in the EPA DQO guidance. Criteria have not been determined by the aforementioned practicing professionals who rely on the data for decisions. This document does not achieve any of the listed objectives because it merely screens existing data, without defining the screening criteria, rather than determining actual data needs of the end users.</p> <p>See General Comments No. 3 (First comment of page 1 of this document)</p>	Comment acknowledged and accommodated. An updated version of the tech memo was produced with an attachment that included an assessment criteria for review of existing data in the form of a checklist.
3			<p>2. The data evaluation/assessment cannot precede development of DQOs, and DQOs cannot proceed with development of preliminary conceptual site models (PCSMs). DQOs are the criteria in which one measures the quality and adequacy of the data. See General comment No. 3. (First comment of page 1 of this document)</p> <p><i>Step 1 – Determine Data Usability Based on Applicability to the Media of Concern for the OU5 CSM that is currently being developed as part of the initial phase of this task.</i></p>	Comment acknowledged and accommodated. An updated version of the tech memo was produced with an attachment that included an assessment criteria for review of existing data in the form of a checklist.
4			<p>3. OU5 is a medium-based OU. <i>“Mine discharge and source material seepage”</i> are not a medium or media, they are a source of contamination to the media. HHRA and ERA assessors will need to evaluate risk attributable to exposures originating from the other OUs. In other words, EPA cannot evaluate risk from OU5 media alone.</p>	Comment acknowledged and accommodated. An updated version of the tech memo was produced with an attachment that included an assessment criteria for review of existing data in the form of a checklist.

Table 4. ODEQ, 02/02/16

Document Title: Process and Criteria for Determining Analytical Data Usability for the Tar Creek Operable Unit 5

Redial Investigation and Human Health Risk Assessment Tech Memo

Date of Subject Document: 12/09/15

Item	Section	Page	Comment	CH2M HILL Response
1	Title	1	Delete "Process and"	Comment noted. Updates were made to the tech memo.
2	Title	1	Replace "Determining" with "Evaluating"	Comment noted. Updates were made to the tech memo.
3	Overview Par 2	1	Delete "a data" from sentence 1	Comment noted. Updates were made to the tech memo.
4	Overview Par 2	1	Delete "process and" from sentence 2	Comment noted. Updates were made to the tech memo.
5	Overview Par 2	1	"forms" in sentence 3: data usability worksheet? If not, what form?	Comment noted. Updates were made to the tech memo.
6	Step 1	2	Delete "Determine Data Usability Based on" from title. Already know that we are evaluating data usability. Seems redundant and overly complicated.	Comment noted. Updates were made to the tech memo.
7	Step 1	2	Second set of bullets: Breaking section up into sub-headings General suggestion for section: Paragraph 1 – Background Paragraph 2 – Site Characterization Paragraph 3 – HH Eval	Comment noted. Updates were made to the tech memo.
8	Mine Discharge and Source Material Seepage	3	First sentence, "is flowing": not all discharges flow, some pool.	Comment noted. Updates were made to the tech memo.
9	Mine Discharge and Source Material Seepage	3	Sentence 2 underlined: Is this true? When has this been predicted?	Comment noted. Updates were made to the tech memo.
10	Step 2	3	Delete "Determine Data Usability Based On"	Comment noted. Updates were made to the tech memo.
11	Step 2	3	Margin area: OU1 – APAR Waiver OU4 – No seeps addressed	Comment noted. Updates were made to the tech memo.
12	Step 3	3	Delete "Determine Data Usability Based on" from title	Comment noted. Updates were made to the tech memo.
13	Attachment 1	1	Be consistent with "useability" versus "usability"	Comment noted. Updates were made to the tech memo.

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Table 5. Quapaw Tribe, 01/25/16

Document Title: Human Health Risk Assessment

Date of Subject Document: 12/09/15

Item	Section	Page	Comment	CH2M HILL Response
1	-	-	<p>The Tribe strongly supports using the Quapaw Tribal Human Health Risk Scenario. The Spokane Tribe scenario was relied upon by EPA to perform the HHRA for OU4, because the QTO Scenario and RME were not available prior to developing the ROD for OU4. In the mid to late 1990's, EPA realized that Tribal uses were not being evaluated and that a data gap existed: specifically EPA did not have a HHRA Scenario that could be relied upon to estimate risk to tribal citizens who live on or near the site. Therefore, none of the earlier remedies are designed to protect the health of Tribal citizens—the remedies were designed to protect a population that does not and likely never will ever live there.</p> <p>Today the set of Tribal HHRA Scenarios developed by Dr. Harper are routinely relied upon at Superfund sites to protect tribal citizens. Although the QTO scenario was developed for the QTO, the scenarios were developed for representative Tribes who reside in different ecological settings throughout the U.S. This means that the QTO scenario should represent the majority of activities for the other seven Tribes affected by the superfund site. Perhaps slight changes may be necessary by each specific Tribe to correctly reflect their uses of resources downriver from the Tar Creek area.</p>	Comment noted. Harper (2008) has been used extensively to formulate the CEM.

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Table 6. Peoria Tribe, 01/27/16

Document Title: Human Health Risk Assessment

Date of Subject Document: 12/09/15

Item	Section	Page	Comment	CH2M HILL Response
1	-	-	<p>The Peoria Tribe commented that they are immediately downstream of OU4 and bounds the Quapaw reservation boundaries (within which most of OU4 lies) on both the west and the south, and has Tar Creek traversing through Peoria jurisdiction, the Peoria lands receive the first and greatest flush of mining contaminants from OU4.</p> <p>Spring River traverses completely through the Peoria jurisdictional boundaries, north to south, and the Neosho river, into which Elm creek empties, forms a part of the western boundary of Peoria lands. Therefore, these watersheds and OU5 greatly impacts the Peoria Tribe.</p> <p>And because of the co-mingling of tribal cultures within Ottawa County where nine Native American Indian Tribes coexist, the Peoria Tribe feels that the assessment and exposure document by Dr. Barbra Harper; "Quapaw Traditional Lifeways Scenario" and "Risk Evaluation of Consumption of Beef and Milk Taken From Cows raised on A Contaminated Area of the Tar Creek Superfund Site" by Ghassan A. Khoury, 3/04, very adequately express the situation and concerns of the Peoria Tribe, even though the two tribes originate from different sources.</p>	Comment noted. Harper (2008) has been used extensively to formulate the CEM.

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Table 7. Quapaw Tribe, 01/25/16

Document Title: Human Health Risk Assessment Preliminary Exposure Area

Date of Subject Document: 12/09/15

Item	Section	Page	Comment	CH2M HILL Response
1	-	-	The Tribe strongly supports using Fourmile creek as an appropriate reference area. AESE 2008 employs EPA guidance and adheres to EPA's QAPP produced for the Midnite Mine Superfund site, to calculate values of background (UTL95 and maximal values) for TAL metals in surface water and sediments sampled on Fourmile Creek as well as Tar and Lytle creeks located upgradient of the TCSFS. This work was prepared for anticipated litigation. All data have been validated by a third party and are traceable.	Comment noted. Fourmile Creek is being used as reference area as agreed by all site stakeholders.

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Table 8: Wyandotte Nation, 01/26/16

Document Title: Human Health Risk Assessment Preliminary Exposure Area

Date of Subject Document: 12/09/15

Item	Section	Page	Comment	CH2M HILL Response
1	-	-	Additionally, The Wyandotte Nation supports using Fourmile Creek as an appropriate reference area, as it is located up gradient of the Tar Creek Super Fund Site.	Comment noted. Fourmile Creek is being used as reference area as agreed by all site stakeholders.

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Table 9. Wyandotte Nation, 01/25/16

Document Title: Preliminary Conceptual Exposure Model

Date of Subject Document: 12/09/15

Item	Section	Page	Comment	CH2M HILL Response
1	-	-	<p>Although the Wyandotte Nation does not have their own Exposure/Traditional Lifeways Scenario developed yet, we would like to suggest EPA look at the Quapaw Lifeway Scenario, when addressing tribal health risks concerning OU5. The Quapaw Lifeways Scenario does not fully represent the Wyandotte Nation Tribal health risks, but is a close representative of tribal lifeways within the OU5 watershed.</p> <p>The Wyandotte Nation supports the using of the Quapaw Lifeways Scenario for the Human Health Exposure Scenario and Focus Area Map (06TS).</p>	<p>Comment noted. Harper (2008) has been used extensively to formulate the CEM.</p>

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Table 10. Peoria Tribe, 01/27/16

Document Title: Preliminary Conceptual Exposure Model

Date of Subject Document: 12/09/15

Item	Section	Page	Comment	CH2M HILL Response
1	-	-	<p>Peoria tribe comments at the bottom of Table 1 it states: "Notes: Small game (birds, rabbits) and large game (deer, elk) animals not addressed in OU5 because they are addressed as part of OU4 (source material, transition zone, soil, residential yards, and wells)</p> <p>The tribes concern is that aquatic oriented mammals, who live in and are dependent upon streams and other impacted species within those streams, beaver, mink, muskrat, river otters, etc., are not addressed. Both are a subsistence and cultural resource for tribal members.</p>	Comment addressed in CEM with inclusion of raccoon.
2	-	-	<p>Peoria tribe commented that the comments by the Quapaw Tribe reflect also the same as the Peoria Tribe.</p>	Comment noted.

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Table 11. ODEQ, 02/02/16

Document Title: Preliminary Conceptual Exposure Model

Date of Subject Document: 12/09/15

Item	Section	Page	Comment	CH2M HILL Response
1	-	-	"Seeps from mine drainage" under column header "Exposure Medium": Is there a reason we can't call this mine water or groundwater?	Comment acknowledged and addressed in updated CEM.
2	-	-	"Dermal Contact" under column header "Exposure Route": Ingestion?	Comment acknowledged and addressed in updated CEM.
3	-	-	Bottom of column titled "Rationale for Selection or Exclusion of Exposure Pathway": Seems like an exposure route could be seeps going into SW and then ingestion from there.	Comment acknowledged and addressed in updated CEM.

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Table 12. Katrina Higgins-Coltrain, US EPA REGION 6, 2/18/16

Document Title: Preliminary Conceptual Exposure Model

Date of Subject Document: NA

Item	Section	Page	Comment	CH2M HILL Response
1	-	-	Katrina mentioned that she thought a previous comment related to upland animal direct/contact/ingestion of surface water as not on the CEM. Also, she mentioned that she believed the OU4 risk assessment did not evaluate this scenario	Comment acknowledged and addressed in updated CEM.

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Table 13. Ottawa Tribe, 02/03/16

Document Title: Process and Criteria for Determining Analytical Data Usability for the Tar Creek Operable Unit 5 Remedial Investigation and Human Health Risk

Assessment Tech Memo, Preliminary Conceptual Exposure Model

Date of Subject Document: 09/22/15, 12/09/15, 12/09/15

Item	Section	Page	Comment	CH2M HILL Response
1	-	-	The Ottawa Tribe herein adopts by reference and incorporates the comments submitted by the Quapaw Tribe on the process and criteria for determining the usability of available analytical data for the Tar Creek Operable Unit (OU) 5 (sediment and surface water) remedial investigation (RI) site characterization and baseline human health risk assessment (HHRA). The Ottawa Tribe fully agrees with the Quapaw Tribe's comments concerning the Quapaw Tribal Human Health Risk Scenario being the most representative of activities for the other seven Tribes affected by the Site and adopts and incorporates them herein as its own comments.	Comment noted. Harper (2008) has been used extensively to formulate the CEM.

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Table 14. Responses to Comments Provided by Brian Stanila – Oklahoma Department of Environmental Quality

Comments Dated: February 27, 2017

Subject Document: Remedial Investigation Data Summary Report Version 1.0, Tar Creek Superfund Site Operable Unit 5, Ottawa County, Oklahoma

Date of Subject Document: December 2016

Item	Section	Page	Paragraph	Comment	Response	Confirmation
1.	1.2	--	--	Use of Four Mile Creek as background - Recently, additional mine waste was found outside the OU4 Boundary in the Squaw Creek Watershed. Please see enclosed Figure. While this waste doesn't appear to impact Four Mile Creek, DEQ feels that it is important to acknowledge that the current Background Reference Site is sandwiched between two potentially impacted watersheds and respond appropriately. In addition, two mine shafts appear to be present in the Four Mile Creek watershed (See Figure). These two items should be given consideration and at the very least document that Four Mile Creek is within the mining district.	Given watershed hydraulics, if a historic mining feature exists in the watershed of Squaw Creek, it is not expected to have impacted the Fourmile Creek watershed. Coordinates for the two mine shafts suspected to be within Fourmile Creek's watershed will be evaluated to confirm they are accurate. If these mine shafts are found to be present in the Fourmile Creek watershed, this will be discussed in the uncertainty section of the human health risk assessment and noted in the remedial investigation report. Fourmile Creek will continue to be utilized as the study background or reference area within the caveats described above.	No change needed
2.	1.6	--	--	States that Section 7 is Data Quality Objectives. Section 7 is References. There doesn't appear to be a section for DQO included in this document at this time.	The comment is correct; reference to Section 7, Data Quality Objectives will be deleted.	Addressed
3.	2.2	--	--	2nd to last sentence: Insert "Grand" before "Lake of the Cherokees".	The text will be corrected.	Addressed
4.	2.4	--	--	Is it Fourmile Creek or Four Mile Creek? Please be consistent and use one or the other, not both.	The USGS hydraulic database refers to it as Fourmile (one word) Creek. The text will be checked for consistent use of "Fourmile Creek"	Addressed
5.	2.4.2	2-8	2	"Oklahoma University". Please correct to what I assume to be University of Oklahoma	The text will be corrected to refer to the "University of Oklahoma".	Addressed
6.	2.4.2	2-8	4	Mentions Quapaw Creek. I have not heard of this creek, is it relevant for this document? Should it be a different Creek name?	Quapaw Creek is a tributary to Tar Creek; its location is illustrated on Figure 1-2 south of the confluence of Tar and Lytle Creeks.	No change needed

Table 14. Responses to Comments Provided by Brian Stanila – Oklahoma Department of Environmental Quality

Comments Dated: February 27, 2017

Subject Document: Remedial Investigation Data Summary Report Version 1.0, Tar Creek Superfund Site Operable Unit 5, Ottawa County, Oklahoma

Date of Subject Document: December 2016

Item	Section	Page	Paragraph	Comment	Response	Confirmation
7.	3.1	--	--	It is understood that the Conceptual Exposure Model tracks the receptors but it is also common practice to show receptors on the CSM as well. Please consider adding receptors to the CSM.	The CSM will be updated to show receptors.	Addressed
8.	3.1	--	6	"flowing drainage pathway water (MESL, 2010)" - this sounds jumbled or rearranged incorrectly. Should it be "flowing water drainage pathway"? This same phrase is used on page 3-2, paragraph 4.	The text will be revised for clarity.	Addressed
9.	3.3	--	--	Contradicting statements made in 3.3 and 3.3.3.3. Statement in 3.3 is that all exposure media will be evaluated quantitatively. However, 3.3.3.3 states that waterfowl will be evaluated qualitatively. Please clarify the contradicting statements.	The text will be revised to clarify that all exposure media will be evaluated quantitatively with the exception of waterfowl, which will be evaluated qualitatively.	Addressed
10.	3.3.3.3	--	--	Does TerraGraphics 2001 HHRA and furthermore the Weston (1989) Coeur d'Alene Duck study meet the data requirements outlined in Section 5? The Weston Study is approximately 25 years old. The concern is that we are basing decisions for the Tar Creek Site on a document from another similar site that wouldn't meet the criteria established for usable data.	The data requirements presented in Section 5 are for data to be used quantitatively in the HHRA. The data presented in the TerraGraphics 2001 HHRA and Weston 1989 duck study will not be used quantitatively in the HHRA, but rather will be used to discuss the relative significance of this potential exposure pathway.	No change needed
11.	3.3.3.3	--	--	How will waterfowl be qualitatively assessed? In what manner? Also, the CEM states that waterfowl will be quantitatively assessed? These two contradicting statements should be clarified.	The CEM will be updated to indicate a qualitative evaluation. Waterfowl will be evaluated qualitatively by discussing the findings of the Coeur d'Alene River Basin Cleanup Site in which tissue metal concentrations in waterfowl were found to be relatively low and not quantified in the HHRA for that site.	Addressed

Table 14. Responses to Comments Provided by Brian Stanila – Oklahoma Department of Environmental Quality

Comments Dated: February 27, 2017

Subject Document: Remedial Investigation Data Summary Report Version 1.0, Tar Creek Superfund Site Operable Unit 5, Ottawa County, Oklahoma

Date of Subject Document: December 2016

Item	Section	Page	Paragraph	Comment	Response	Confirmation
12.	5.4.1.1	--	--	This section indicates the use for fish heads is the making of soups. It also seems to indicate the analysis will be for the entire fish head including bones. Two of the contaminants of interest (lead and cadmium) almost entirely accumulate in the bones of fish. The contaminants do not appreciably accumulate in tissue, fat, or skin. Using sample results of the entire head, including bones, to evaluate risk from consuming fish head soup will likely overstate risk unless the entire head is consumed while eating fish head soup. The media undergoing chemical analysis should reflect what is actually being consumed.	We agree that using sample results of the entire head is likely to be a conservative approach, but the analysis of the whole head including bones is consistent with the practice of boiling the whole head with bones, which may release metals into the soup. This will be discussed in the uncertainty section of the risk assessment.	No change needed

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Table 15. Responses to Comments Provided by the Tar Creek Trustee Council Indian Tribes (TCTCIT)

Comments Dated: February 27, 2017

Subject Document: Remedial Investigation Data Summary Report Version 1.0, Tar Creek Superfund Site Operable Unit 5, Ottawa County, Oklahoma

Date of Subject Document: December 2016

Item	Section	Page	Paragraph	Comment	Response	Confirmation
1.	ES	ES-2	Last three items on this page	The Tar Creek Trustee Council Indian Tribes (TCTCIT) suggest rewording to: "A data gap exists for aquatic plants, and duckweed and arrowhead will be sampled as representative species." We suggest this change because the gap is not specifically duckweed and arrowhead root. EPA stated they would sample up to two plant species, and these were selected as most representative. Same comment for aquatic amphibians and semi-aquatic mammals	The text will be revised as requested.	Addressed
2.	1.2	1-1	1	The TCTCIT request that EPA please removes this text: "(such as Native American Tribes in the area)", as the TCTCIT do not agree that they have been involved in setting this spatial extent.	The text will be revised as requested.	Addressed
3.	1.3	1-2	2	Many statements of fact are made without supporting citation(s). Shouldn't all the statements and facts reported in this section be supported with cited sources?	The text of Section 1.3 will be reviewed and updated to add citations of stated facts.	Addressed
4.	1.3	1-3	1	this ["EPA, 2008"] does not appear in the reference list?	EPA, 2008 refers to the Record of Decision for Tar Creek OU4. This reference will be added to the references list.	Addressed
5.	1.5.2	1-5	1	Please reword to "...considered to be a health concern, at the time (CDC, 1991)." https://www.cdc.gov/nceh/lead/publications/books/plpyc/contents.htm . We note that the CDC has more recently adopted a reference level of 5 ug/dL. Further, this is an action level, and not a safe level. The CDC states there is no safe level for lead (CDC, 2012). http://www.cdc.gov/nceh/lead/ACCLPP/Final_Document_030712.pdf .	The comment refers to the statement: "... the level of lead in the blood the Centers for Disease Control considers to be a health concern." The text will be revised as requested.	Addressed
6.	1.5.2	1-6	1	TCTCIT suggest adding: "However, the CDC more recently adopted a lower value of 5 ug/dL, and the EPA is currently re-evaluating its use of the 10 ug/dL value that the CDC no longer supports. In particular, the EPA recently released an Integrated Science Assessment for Lead, which concluded based on a review of currently available research that blood lead levels below 10 µg/dL are associated with decreased cognitive function in children and other effects in children and adults (EPA, 2013). " https://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=255721	The requested text will be added to the Data Gap Summary Report, and addressed in the future HHRA.	Addressed

Table 15. Responses to Comments Provided by the Tar Creek Trustee Council Indian Tribes (TCTCIT)

Comments Dated: February 27, 2017

Subject Document: Remedial Investigation Data Summary Report Version 1.0, Tar Creek Superfund Site Operable Unit 5, Ottawa County, Oklahoma

Date of Subject Document: December 2016

Item	Section	Page	Paragraph	Comment	Response	Confirmation
7.	2.4.1	2-7	3	Why is this unique event highlighted here? It may create the impression that the Neosho is an ephemeral or intermittent stream. A flow rate of zero is an exceptional event that apparently happened once back in 1953 - it is the exception, rather than the norm, which is supported by the data summarized in Figure 2.2.	<p>The comment refers to the statement “The two Tar Creek gages with 10 or more years of data reveal that the minimum 7-day average flow is zero. Despite the large drainage area to the Neosho River gage, the minimum 7-day average flow was zero, measured during the drought of record in 1953.”</p> <p>This text will be revised to “The two Tar Creek gages with 10 or more years of data indicate an annual 7-day minimum flow of zero. The minimum annual 7-day minimum is also zero for the Neosho River gage; this minimum was measured during the drought of record in 1953.”</p>	Addressed
8.	2.4.2	2-8	4	Why is this particular time period [2009 through 2010] focused upon here? What is the relevance of this time interval to the current HHRA?	<p>This text discusses the observations and results from a study conducted over a defined time period. Text will be added to clarify the relevance of this information: discussion of the overall environmental setting is important for both the remedial investigation as well as the HHRA.</p>	Addressed
9.	3.1	3-1	2	Is the CSM figure incomplete? It only shows contaminant pathways in abiotic media, and no exposure pathways to humans.	<p>The exposure pathways and human receptor populations are presented in Table 3-1, Conceptual Exposure Model. A reference to Table 3-1 will be added to this paragraph.</p>	Addressed
10.	3.1	3-1	5, last sentence	While this may be introductory text, with further details to follow, this sentence seems to imply that the only human exposure pathway is through consumption of organisms. Perhaps a “for example” should be added at the beginning of the sentence, or some other clarifying text?	<p>The comment refers to the following text: “As the lower aquatic flora and fauna are consumed by higher trophic-level aquatic biota, the metals are transported through the ecosystem. The higher aquatic organisms may be used for human consumption.”</p> <p>Text will be added to acknowledge other exposure scenarios.</p>	Relevant text moved to applicable Section 3.3 and expanded, and a reference to 3.3 added to 3.1.

Table 15. Responses to Comments Provided by the Tar Creek Trustee Council Indian Tribes (TCTCIT)

Comments Dated: February 27, 2017

Subject Document: Remedial Investigation Data Summary Report Version 1.0, Tar Creek Superfund Site Operable Unit 5, Ottawa County, Oklahoma

Date of Subject Document: December 2016

Item	Section	Page	Paragraph	Comment	Response	Confirmation
11.	3.2.3	3-3	1	No citations for all the statements in this section about geochemical processes?	The text of Section 1.3 will be reviewed and updated to add citations of stated facts	Addressed
12.	3.2.3	3-3	2	This should probably be re-worded to "may provide... depending upon pH and other parameters, such as redox condition, dissolved organic matter, etc."	The text will be revised as requested.	Addressed
13.	3.3	3-4	2	Please revise universally to: "Tribal members and citizens"	The comment refers to the phrase: "the general public and tribal member populations." EPA traditionally uses the phrase "general public" to distinguish from Native Americans. The term "tribal member populations" will be revised to "tribal members and citizens"	Addressed
14.	3.3.2	3-4	1	There are also water quality data available in EPA's storet database - these are included in appendix A, why not cited here?	The citations will be updated to include EPA's STORET database.	Addressed
15.	3.3.3.2	3-5	1	This is a published paper - why not follow the standard citation method? (Lead author, et al., date)?	The citation format will be corrected.	Addressed
16.	3.3.3.3	3-5	All	The TCTCIT has coordinated with EPA on the opportunistic collection of waterfowl and deer samples from hunters. This effort should be included as a data source in this report - Please include mention where appropriate.	The comment is correct that deer samples were provided by hunters; associated text will be added to Section 3.3.4 indicating deer samples were obtained. Note that no opportunistic waterfowl samples have been received.	Addressed
17.	3.3.3.3	3-5	1	We are aware of four studies that report the concentration of metals in the tissue of migratory aquatic birds (waterfowl): Beyer et al., 2004 Carpenter et al., 2004 Sileo et al., 2003 van der Merwe et al., 2011. As far as we are aware, the first four analyzed organs for metals content, and the van der Merwe study is the only one that collected and analyzed muscle tissue.	The comment refers to the report by Beyer, et. al. cited in the text. The additional literature/data resources provided in the comments will be reviewed and considered for use in the qualitative evaluation of waterfowl in the HHRA.	No change needed

Table 15. Responses to Comments Provided by the Tar Creek Trustee Council Indian Tribes (TCTCIT)

Comments Dated: February 27, 2017

Subject Document: Remedial Investigation Data Summary Report Version 1.0, Tar Creek Superfund Site Operable Unit 5, Ottawa County, Oklahoma

Date of Subject Document: December 2016

Item	Section	Page	Paragraph	Comment	Response	Confirmation
18.	3.3.4	3-6	1	We do not understand the logic of this statement - can it please be further clarified. Wild game such as deer and rabbit form a part of the Tribal diet, and therefore are potential exposure pathways for individuals who also consume fish, waterfowl and other biological resources. They should therefore be included in this gap analysis and in the risk assessment analysis.	<p>The scope of work for Tar Creek OU5 is focused on the aquatic environment of perennially flowing streams and creeks and not the terrestrial environment.</p> <p>The site has been divided up into multiple OUs. Under this site management approach, a HHRA is prepared for each OU. It is acknowledged that receptors may contact media in more than one OU, but each OU addresses different potential exposures. The potential exposures addressed under OU5 are associated with the aquatic environment. OU4 addressed terrestrial and upland exposure scenarios and included inputs from ingestion of beef, small game, surface water, fish, and terrestrial plants.</p> <p>Clarification will be added to Section 1.2 and 3.3.4.</p>	Addressed
19.	3.3.4	3-6	2	<p>There is no source cited here for the OU4 HHRA -please add a source (possibly https://semspub.epa.gov/work/06/9223551.pdf ?)</p> <p>Given that the "metabolic factor" (MF) used in the modeled tissue concentration "estimates the amount of COPC that remains in fat and muscle", (EPA, 2005), it appears this analysis only considered muscle tissue, and not organs, is that correct</p> <p>EPA 2005: https://epaprgs.ornl.gov/radionuclides/2005_HHRAP.pdf</p> <p>Tribal members and citizens also consume organs, including the liver, which is known to accumulate toxins. Therefore, an assessment based on muscle tissue concentrations may not be adequate.</p>	<p>Reference to the OU4 HHRA will be added to the text.</p> <p>The terrestrial small game and large game ingestion scenarios evaluated in the HHRA for Tar Creek OU4 considered muscle tissue, not organs.</p>	Addressed
20.	4.3	4-3	1	Is this database available to stakeholders, and publicly available?	The database will be made available to all stakeholders as a component of the remedial investigation report.	No change needed

Table 15. Responses to Comments Provided by the Tar Creek Trustee Council Indian Tribes (TCTCIT)

Comments Dated: February 27, 2017

Subject Document: Remedial Investigation Data Summary Report Version 1.0, Tar Creek Superfund Site Operable Unit 5, Ottawa County, Oklahoma

Date of Subject Document: December 2016

Item	Section	Page	Paragraph	Comment	Response	Confirmation
21.	4.3	4-3	3	Is this an accurate description of "carcass"? As defined by DEQ and USGS in their sampling efforts, a carcass sample is a headless, eviscerated fish, with muscle and bones intact.	The comment refers to the text "... carcass (remains after fileting)...". The text will be revised to use the cited definition.	Addressed
22.	5	5-1	--	<p>The TCTCIT notes that in order to fully assess human health risk to Tribal members and citizens due to the presence of metals, it is important to characterize all exposure categories, including the concentrations and amounts of metals consumed in all dietary items, not just those found within the water and sediments of OU5. Otherwise, the assessment will under-estimate exposure and risk.</p> <p>For example, exposure via all plants consumed by the Tribes should be included in the HHRA, not just aquatic plants. Other dietary sources should also be included in the gap analysis - including wild game (e.g. - deer).</p>	<p>The scope of work for Tar Creek OU5 is focused on the aquatic environment of perennially flowing streams and creeks and not the terrestrial environment.</p> <p>The site has been divided up into multiple OUs. Under this site management approach, a HHRA is prepared for each OU. It is acknowledged that receptors may contact media in more than one OU, but each OU addresses different potential exposures. The potential exposures addressed under OU5 are associated with the aquatic environment. OU4 addressed terrestrial and upland exposure scenarios and included inputs from ingestion of beef, small game, surface water, fish, and terrestrial plants.</p> <p>Clarification will be added to Section 1.2 and 3.3.4.</p>	Addressed
23.	5.1.2	5-2	--	As noted above - this is a journal publication, and normally it would be cited as "Angelo et al., 2007"	The citation format will be corrected.	Addressed
24.	5.4.1.2	5-6	1	The USGS also conducted a fish (and crayfish) study in the area, and reported both fillet and carcass concentrations of Pb, Zn and Cd. Published in two papers - Schmitt et al., 2006 and Brumbaugh et al., 2005	<p>The Brumbaugh et al., 2005 study was considered and was concluded to be usable for background purposes only (see Appendix A of the Data Gap Summary Report).</p> <p>The Schmitt et al., 2006 study will be evaluated to determine if the presented data are usable and the Data Gap Summary Report will be updated to address this.</p>	Addressed

Table 15. Responses to Comments Provided by the Tar Creek Trustee Council Indian Tribes (TCTCIT)

Comments Dated: February 27, 2017

Subject Document: Remedial Investigation Data Summary Report Version 1.0, Tar Creek Superfund Site Operable Unit 5, Ottawa County, Oklahoma

Date of Subject Document: December 2016

Item	Section	Page	Paragraph	Comment	Response	Confirmation
25.	5.4.2	5-6	1	Crayfish data are also available from two USGS studies: Schmitt et al., 2006 and Wildhaber et al., 1997	The Schmitt et al., 2006 and Wildhaber et al, 1997 studies will be evaluated and addressed in the revised Data Gap Summary Report	Addressed
26.	5.4.3.3	5-8	1	See note earlier in the document on bird studies in the area, and comment regarding opportunistic sampling of waterfowl and deer.	See previous responses to the cited comments.	Addressed
27.	5.4.4.3	5-9	1	This should be reworded as noted above - there is a data gap in aquatic plant data, and arrowhead and duckweed were selected as representative plant species.	The text will be revised as requested.	Addressed
28.	5.4.5	5-9	1	Similarly - Tribal members and citizens consume both frogs and turtles. The Tribes agreed to use frogs to represent the amphibian/reptile exposure route, but it is important to acknowledge that turtles are also consumed.	The text will be revised as requested.	Addressed
29.	5.4.6	5-10	1	Again - Tribal members and citizens consume several aquatic fur-bearers, including beaver, muskrat and raccoon. The Tribes agreed to use raccoon to represent this consumption group in the HHRA, but it's not the only one they eat.	The text will be revised as requested.	Addressed
30.	7	7-1	12	This should be entered as Angelo et al., 2007	The citation format will be corrected.	Addressed
31.	Appendix A	--	1	The TCTCIT have fish and mussel/clam data that were collected under EPA grants, and do not appear in this table - we would be happy to provide these data upon request. In addition - as noted below, we have a few questions on data sources that were rejected - if more convenient for EPA, we would be happy to have a conference call to discuss these data sources.	We welcome this new material and encourage the TCTCIT to provide the reports and associated data to EPA as soon as possible for inclusion in the revised report.	Additional material not received.
32.	Appendix A	--	4	Reference 55: What does "SIR" stand for? (spell out acronym please) Why was this resource rejected?	SIR - Scientific Investigation Report This resource was not used because no data was presented.	Addressed
33.	Appendix A	--	4	Reference 59: Could the TCTCIT please have a copy of this report/dataset?	The report is available on the OU5 Stakeholders SharePoint site.	No change needed

Table 15. Responses to Comments Provided by the Tar Creek Trustee Council Indian Tribes (TCTCIT)

Comments Dated: February 27, 2017

Subject Document: Remedial Investigation Data Summary Report Version 1.0, Tar Creek Superfund Site Operable Unit 5, Ottawa County, Oklahoma

Date of Subject Document: December 2016

Item	Section	Page	Paragraph	Comment	Response	Confirmation
34.	Appendix A	--	4	Reference 62: Why was this rejected?	No data were presented in the cited reference	No change needed
35.	Appendix A	--	5	Reference 73: Why was this rejected?	Sediment toxicity data is not usable for nature and extent evaluations (for the RI) or for the HHRA since it does not contribute to defining the nature of the release nor its extent, or potential human health impacts.	No change needed
36.	Appendix A	--	6	Reference 95: Why was this rejected?	Reference 95 is the appendices associated with Reference 8 (text). Data provided in Reference 8 was concluded to be usable for the RI. The data resources log will be revised to reflect this.	No change needed
37.	Appendix A	--	6	Reference 96: Why was this rejected?	Data were not collected from the six exposure focus areas within OU5.	No change needed
38.	Appendix A	--	6	Reference 98: Why was this rejected?	It could not be determined if samples were collected from the six exposure focus areas within OU5.	No change needed
39.	Appendix A	--	7	Reference 113: Why was this rejected?	Data were not validated and sufficient data was not available to perform data validation.	No change needed

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Table 16. Responses to Comments Provided to the Quapaw Tribe of Oklahoma (QTO) by Dr. F. E. Kirschner - Senior Scientist, ASES

Comments Dated: February 27, 2017

*Subject Document: Remedial Investigation Data Summary Report Version 1.0, Tar Creek Superfund Site Operable Unit 5, Ottawa County, Oklahoma
(portions that pertain to QTO generated data only)*

Date of Subject Document: December 2016

Item	Section	Page	Paragraph	Comment	Response	Confirmation
1.	Appendix D	--	--	<p>[This comment refers to the checklist for the cited document presented in Appendix D of the Remedial Investigation Data Gap Summary Report]</p> <p>Checklist for Assessment of Existing Information Operable Unit 5 Tar Creek Superfund Site, Ottawa County, Oklahoma <i>Title of document: Site Characterization Report: Sediments, Surface Water, and Vegetation of Tar Creek, Lytle Creek, and Beaver Creek, Oklahoma</i> <i>Agency/Author: F. E. Kirschner/AESE, Inc.</i> <i>Publication ID: --</i> <i>Publisher: Quapaw Tribe of Oklahoma</i> <i>Year Published: 01/2008</i> <i>Data format (Excel, Access, Word, PDF, etc.): PDF</i></p> <p>Many of the entries of the table related to this QTO document and supporting data appear to be incorrect. As stated before in preceding communications, the data delivered to EPA had been acquired for litigation purposes and involved Level 4 data packages which were subsequently validated by a third party. This means that entries AF-3 and AF-5 are incorrect.</p> <p>Pollen and roots of Cattails (Typha) were sampled during this endeavor (Aquatic Biota (AF-2)).</p> <p>Although the data are now greater than 10 years old (AF-2), the data are still usable for the N&E as well as the BERA and the HHRA. However, as long as EPA has secured adequate funds, the QTO supports further sampling as long as the coverage, the list of COCs, sampling techniques and analytical techniques are comparable.</p>	<p>The checklist for this resource will be revised and updated as appropriate.</p> <p>Note that the current focus of OU5 is a human health risk assessment. The aquatic biota selected by the stakeholder group does not include cattails.</p>	Addressed

Table 16. Responses to Comments Provided to the Quapaw Tribe of Oklahoma (QTO) by Dr. F. E. Kirschner - Senior Scientist, ASES

Comments Dated: February 27, 2017

*Subject Document: Remedial Investigation Data Summary Report Version 1.0, Tar Creek Superfund Site Operable Unit 5, Ottawa County, Oklahoma
(portions that pertain to QTO generated data only)*

Date of Subject Document: December 2016

Item	Section	Page	Paragraph	Comment	Response	Confirmation
2.	--	--	--	<p>EPA is erroneously attempting to limit COPCs for the Tar Creek Superfund Site (TCSFS). The RODs and Consent Decrees governing cleanup of the Tri-State Mining District (TSMD) Region 7, limited the COPCs for study to only Cd, Pb, and Zn. This was likely due in part to the fact that risk to Native American resource users was not evaluated and in part to non-technically-based legal negotiations between the PRPs and EPA/DOJ.</p> <p>Lawyers for EPA/DOJ enabled this problem to propagate into the AOC for OU4 of the Tar Creek Superfund Site (TCSFS) where Native Americans have reserved rights to resources that are clean and free of man-made/man caused contamination for unlimited uses included subsistence¹ (see end of comment for footnote text). Identifying only these three COPCs for OU4 of the (TCSFS) is an artifact of legal negotiations and is not based guidance or regulations supporting CERCLA.</p> <p>As we have pointed-out time on numerous occasions, QTO lands are reserved to be the permanent homeland of the QTO providing all the necessary resources. The reasonably foreseeable future land use (RFFLU; OSWER Directive 9355.7-04) of the reservation lands must support traditional QTO uses. This will require a future designation for <u>unrestricted land use</u>.</p> <p>Our considerable experience on similar sites in which traditional uses are the target RFFLU, is that risk from any COPC that exceeds natural background concentrations must be evaluated. This means that measuring all site related COPCs must be included in the DQOs. This also means that predefined screening levels, like those discussed in Section 6.5 are not germane, are not protective of the QTO, and have no place in screening of the data for adequacy to support the BHHRA.</p> <p>¹The QTO has provided lengthy comments on this issue while commenting on the RI/FS for OU4. However, the AOC for OU4 which enumerates these three COPCs as the only chemical analytes had already been negotiated. The QTO were not a party to these negotiations.</p>	Section 6.5 will be updated to indicate that all new samples to be collected will be analyzed for Target Analyte List metals.	Addressed

Table 16. Responses to Comments Provided to the Quapaw Tribe of Oklahoma (QTO) by Dr. F. E. Kirschner - Senior Scientist, ASES

Comments Dated: February 27, 2017

Subject Document: Remedial Investigation Data Summary Report Version 1.0, Tar Creek Superfund Site Operable Unit 5, Ottawa County, Oklahoma
(portions that pertain to QTO generated data only)

Date of Subject Document: December 2016

Item	Section	Page	Paragraph	Comment	Response	Confirmation
3.	ES-2	ES-2	2	<p>[The comment refers to the following cited text from the Data Gap Summary Report:]</p> <p><i>“Based upon completion of the above tasks, the following points summarize the findings of the data gap assessment:</i></p> <p>Sediments – <i>Data gaps exist for sediments for use in the HHRA evaluation in Fourmile Creek, Elm Creek, and Lost Creek. The available sediment data is sufficient for nature and extent characterization but will be supplemented with the new data collected to address the HHRA data gap.” [Emphasis added].</i></p> <p>Fourmile Creek is a reference stream; therefore, risk for this stream should not be estimated and further sampling for this area is not warranted. Otherwise, EPA will be evaluating Total risk, and not Incremental release attributed to the site releases.</p> <p>See Section 6.1 paragraph 1 as well.</p>	<p>Risk will not be evaluated for Fourmile Creek; The data to be collected will be for use of this watershed as a reference area.</p> <p>The text will be revised to clarify.</p>	Addressed
4.	5.1.2	5-2	First bullet on page	<p>[The comment refers to the following cited text from the Data Gap Summary Report:]</p> <p><i>Kirschner, F. E., ASES, Inc. 2008. Site Characterization Report: Sediments, Surface Water, and Vegetation of Tar Creek, Lytle Creek, and Beaver Creek, Oklahoma. [Emphasis added].</i></p> <p>The Corporation name is AESE, Inc., not ASES, Inc. Please do a global search and replace.</p>	<p>A search will be performed and all references to “ASES” will be corrected to “AESE”.</p>	Addressed
5.	5.3.1	5-4	--	<p>[The comment refers to the following cited text from the Data Gap Summary Report:]</p> <p>5.3.1 Data Requirements <i>Mine discharge will be evaluated for dermal contact and, therefore, will require unfiltered metal results for the HHRA.</i></p> <p>Dermal contact is not a main driver for risk from these features. Direct ingestion of mine discharges and shallow groundwater must be evaluated in the BHHRA as complete and pertinent current and future pathways.</p>	<p>Dermal contact with flowing mine discharge will be evaluated in the HHRA. Direct consumption of flowing mine discharge is not a reasonable current or future human health risk exposure scenario, whereas surface water will be evaluated for both dermal contact and direct ingestion.</p>	No change needed

Table 16. Responses to Comments Provided to the Quapaw Tribe of Oklahoma (QTO) by Dr. F. E. Kirschner - Senior Scientist, ASES

Comments Dated: February 27, 2017

*Subject Document: Remedial Investigation Data Summary Report Version 1.0, Tar Creek Superfund Site Operable Unit 5, Ottawa County, Oklahoma
(portions that pertain to QTO generated data only)*

Date of Subject Document: December 2016

Item	Section	Page	Paragraph	Comment	Response	Confirmation
6.	Table 3-1	--	--	CSM does not include subsistence uses (only depicts recreational uses) and does not show transfer between abiotic and biotic media.	Figure 3-2 will be updated to reflect potential transfer to the biota specified in Table 3-1.	Addressed
7.	Appendix A	--	--	Reference 103 is incorrect. Taylor and Francis Group are publishers, not authors.	The text will be corrected.	Addressed

Table 17. Responses to Comments provided by Mosby Halterman - Eastern Oklahoma Region, BIA

Comments Dated: February 23, 2017

Subject Document: Remedial Investigation Data Summary Report Version 1.0, Tar Creek Superfund Site Operable Unit 5, Ottawa County, Oklahoma

Date of Subject Document: December 2016

Item	Section	Page	Paragraph	Client Comment	CH2M Response	Confirmation
1.	1.5.1	1-5	--	I am having an issue finding this particular reference, 40 CFR 300.430(1)(i)(C)(6). Should it be 40 CFR 300.430(f)(1)(ii)(C)(6)?	The correct reference is 40 CFR 300.430 (f)(1)(ii)(C)(6) and the report text will be revised.	Addressed
2.	--	--	--	Deer were mentioned during the Stakeholders meeting recently held in Miami. I remember that Larry Tippit was handling sample collection. This does not appear to be mentioned in the report.	In the time since the Data Gap Summary Report was issued in December 2016, opportunistic samples of deer tissue (meat, liver, and heart) have been collected and submitted for laboratory analysis. The text of the Data Gap Summary Report will be revised to reflect this.	Addressed.

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Table 18. Responses to Comments Provided by Katrina Higgins-Coltrain - Remedial Project Manager, EPA Region 6

Comments Dated: January 9, 2017

Subject Document: Remedial Investigation Data Summary Report Version 1.0, Tar Creek Superfund Site Operable Unit 5, Ottawa County, Oklahoma

Date of Subject Document: December 2016

Item	Section	Page	Paragraph	Client Comment	CH2M Response	Confirmation
1.	2.3	2-5	Last paragraph on page	The text refers to Figure 3-8 as providing the potentiometric surface of the Roubidoux aquifer. There is no Figure 3-8.	The sentence will be deleted.	Addressed.
2.	2.4	2-6	1	The description of the watershed areas is confusing. The text introduces the Neosho and Spring River watersheds as the primary watersheds in the area, then goes into 7 watersheds that are the focus of the OU5 investigation, but does not clearly explain the relationships between these 7 and the primary. Please clarify.	The text will be revised to clarify.	Addressed
3.	2.4.1	2-7	1	The text description doesn't match Table 2-1. Are the drainage areas transposed?	The text cites 3,794 square miles for the Neosho River gage drainage area, but this number is on Table 2-1 as representing the annual mean for this gage in ft ² /sec. The data will be checked and the table and text corrected.	Addressed
4.	2.4.1	2-7	--	The text discusses 6 gages, and 6 gages are listed on Table 2-1, but the locations of many more gages are shown on Figure 2-1. Any not discussed in the text and table should be removed from Figure 2-1.	The text, table and figure will be revised so they only discuss/list/show the relevant gages.	Addressed
5.	2.4.1	2-7	4	The text refers incorrectly to Table 2-2; the reference should be to Figure 2-2	The citation to Table 2-2 in the existing text will be corrected to Figure 2-2, and the citation to Table 2-3 in the next paragraph will be corrected to Table 2-2.	Addressed
6.	--	2-7	5	In the "ungaged sites" paragraph, the reference to Table 2-3 should be to Table 2-2. Also, the text states "peak flood flows estimated for the 2-year return interval event are nearly 1,000 cfs or greater for all watersheds". This is confusing since most are greater than 1,000 cfs.).	The table citation will be corrected. The text discussion will be revised to clarify.	Addressed
7.	3.3.3.6	3-6	--	Add parasites as another reason not to consume raccoons.	The text will be revised as requested.	Addressed
8.	4.1	4-1	3	The text states: "A project SharePoint site was established to store the literature and resources in one location, with accessibility offered to external Stakeholders." At the time the report was published, this was not yet completed.	The stakeholder SharePoint site was not yet accessible at the time of publication of the draft Data Gap Summary Report, but the site is now accessible and login information has been shared with the stakeholders.	Addressed

Table 18. Responses to Comments Provided by Katrina Higgins-Coltrain - Remedial Project Manager, EPA Region 6

Comments Dated: January 9, 2017

Subject Document: Remedial Investigation Data Summary Report Version 1.0, Tar Creek Superfund Site Operable Unit 5, Ottawa County, Oklahoma

Date of Subject Document: December 2016

Item	Section	Page	Paragraph	Client Comment	CH2M Response	Confirmation
9.	4.3	4-2	1	The text refers to “over 150 historical resources” but Appendix A Data Resource Log lists 147 resources. Please correct.	The text will be clarified to explain that more than 150 resources were reviewed, but some were dismissed as not applicable, and are not therefore listed in Appendix A. The text will also be revised to state that Appendix A provides information for 148 relevant historical resources.	Addressed
10.	4.3	4-2	2	Revise paragraph to clarify.	The paragraph will be revised to: A significant amount of surface water data were extracted from EPA’s STORET database. The STORET database is an electronic database developed by EPA for managing water quality monitoring data; the name is derived from the term “STORage and RETreival”. This database was developed to assist data owners manage data locally and share data nationwide. Data loaded into STORET is collected under approved data quality management programs.	Addressed.
11.	5.1	5-1	1	Clarify why certain sediment data cannot be used for the HHRA. Please include this in the introductory sections of the data gap report.	The text will be revised to clarify and explain why certain sediment data should not be used for the HHRA (sieved data and data collected from a depth profile of greater than 1-foot will not be used).	Addressed
12.	Data Resource Checklists	--	--	This comment is based on a review of about 10 of the checklists. I have some concerns about content. Please review each checklist applicable to the key documents that we are using for analytical data to make sure they are accurate. For example, see the checklist for resource 18 (“Streamflow, Water Quality, and Metal Loads from Chat Leachate and Mine Outflow into Tar Creek”): the checklist indicates “no” in response to “Was the data collected under an approved QAPP?” In overall conclusions, however, the RI box is checked, and Section 5.2.2 indicates the data is usable for the RI and HHRA. Please confirm each checklist is correct and the conclusions are supported.	The data resource checklists will be reviewed for accuracy and to confirm the conclusions are well supported and consistent with the conclusions presented in the text.	The Resource 18 checklist was corrected, and the remaining checklists were scanned for content. For any data used in the RI/HHRA, the applicable checklist will be reviewed in detail.

Table 19. Responses to Comments Provided by Bill Andrews - Director, USGS, Oklahoma Water Science Center

Comments Dated: February 21, 2017

Subject Document: Summary and Fact Sheet Prepared by TASC based on the Remedial Investigation Data Summary Report Version 1.0, Tar Creek Superfund Site Operable Unit 5, Ottawa County, Oklahoma

Date of Subject Documents: January 23, 2017

Item	Section	Page	Paragraph	Client Comment	CH2M Response	Confirmation
1.	--	--	--	Related to the fact sheet, no sampling of freshwater mussels was described, given the threatened nature of some mussel species, obvious consumption of freshwater mussels by local canine and other carnivore and omnivore species (e.g. wild cats and raccoons), and possible human consumption of mussel flesh. The longer document describes how sampling for Asiatic clams is sufficient to represent mussel flesh, but I believe that any determinations would be better served by collecting at least a small set of mussel-flesh-metals-concentration data.	While the fact sheet may only provide limited information on mussels, the Data Gap Summary Report (1) identifies and proposes to utilize existing mussel data for the purpose of the HHRA; (2) acknowledges that additional mussel data would be useful; (3) indicates that Tribal stakeholder input supports the use of Asian clams as a surrogate for mussels; and (4) discusses future Asian clam sampling activities to address the identified data needs.	No change needed
2.	--	--	--	Mr. Andrews provided a copy of his dissertation as a possible data resource: "Plant uptake, Time Trends, and Natural Attenuation of Selected Metals in an Abandoned Mining District", 2011.	We will incorporate this resource into our data resource review and add it to the data resources log as appropriate.	Added to the data resources log.
3.	--	--	--	I saw no mention of sampling for or already having notable datasets regarding metals concentrations in terrestrial vegetation. My dissertation and some previous MSc theses authored by a couple of Dr. Nairn's former students should supply notable data for that important terrestrial-food-chain component.	The scope of work for Tar Creek OU5 is focused on the aquatic environment of perennially flowing streams and creeks and not the terrestrial environment.	No change needed.

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**Table 20. Response to Comment Provided by Earl Hatley, Grand Riverkeeper, Lead Agency, Inc.
Responses to Remedial Investigation Data Summary Report Version 1**

Date of Subject Document: December 2016

Tar Creek Superfund Site Operable Unit 5 Ottawa County, Oklahoma

Item	Section	Page	Paragraph	Client Comment	CH2M Response	Confirmation
1.	--	--	--	I really appreciate how the research is organized. It makes it much easier for me to see where we are in different areas of study and what we still need. I don't really have any questions I need answered right now. Thanks for all the hard work that went in to putting this together this way.	Comment acknowledged.	No change needed.

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Appendix D

Resource Checklists

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Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of Document: Reconnaissance Assessment of Heavy Metals in the Clay Fraction of Sediments Downstream of the Tar Creek Superfund Site in Northeastern Oklahoma		
		Agency/Author: Tribal Environmental Management Services		
		Publication ID: --		
		Publisher: Tribal Environmental Management Services		
		Year Published: 2012		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			unknown
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?			X	
Are specific sampling locations identified?		X		
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			X	
Are all data qualifiers clearly defined?			X	
Was the data collected under an approved QAPP?				Unknown
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		Statistical validation
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of Document: Reconnaissance Assessment of Heavy Metals in the Clay Fraction of Sediments Downstream of the Tar Creek Superfund Site in Northeastern Oklahoma		
	Agency/Author: Tribal Environmental Management Services		
	Publication ID: --		
	Publisher: Tribal Environmental Management Services		
	Year Published: 2012		
	Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria	Yes	No	No but justification why still usable
Overall Conclusions	The document provides results from sediment sampling in the Grand Lake watershed around 2012, however do not have specific dates for the samples. Data underwent some sort of validation primarily through statistical methods.		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both
			X

Primary Reviewer & date: S. Scott 3/26/16

Secondary Reviewer & date of concurrence: P. Lobos 6/20/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: ANALYSIS OF HEAVY METALS (Pb, Zn, Cd) IN CULTURALLY SIGNIFICANT PLANTS WITHIN THE GRAND LAKE WATERSHED OF NORTHEASTERN OKLAHOMA		
		Agency/Author: Ean M. Garvin, Meredith S. Garvin, and Cas F. Bridge Tribal Environmental Management Services, LLC		
		Publication ID: --		
		Publisher: --		
		Year Published: --		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X		Plant Tissue
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?			X	
Are specific sampling locations identified?		X		
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			X	
Are all data qualifiers clearly defined?			X	
Was the data collected under an approved QAPP?				NA
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		X	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: ANALYSIS OF HEAVY METALS (Pb, Zn, Cd) IN CULTURALLY SIGNIFICANT PLANTS WITHIN THE GRAND LAKE WATERSHED OF NORTHEASTERN OKLAHOMA		
		Agency/Author: Ean M. Garvin, Meredith S. Garvin, and Cas F. Bridge Tribal Environmental Management Services, LLC		
		Publication ID: --		
		Publisher: --		
		Year Published: --		
		Data format (Excel, Access, Word, PDF, etc.): PDF		

Criteria		Yes	No	No but justification why still usable
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		X	Qualifiers and detection limits not given in report, but data was validated following national guidelines.
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)

Overall Conclusions		RI	HHRA	Both
Conclusion - Data are usable for what purpose? (circle one):			X	

Primary Reviewer & date: K. Ma 4/1/2016- can be used for HHRA to understand plant uptake and consumption

Secondary Reviewer & date of concurrence: P. Lobos 5/4/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: A HYDROLOGICAL STUDY OF MINE-SURFACE WATER DISTRIBUTION AND INTERACTIONS IN THE BEAVER CREEK WATERSHED, OTTAWA COUNTY, OK: Thesis		
		Agency/Author: University of Oklahoma, Alissan N. Sutter		
		Publication ID: --		
		Publisher: University of Oklahoma		
		Year Published: 2008		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			NA
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?	X		
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?	X		
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X	
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X	
	Are all data qualifiers clearly defined?		X	
	Was the data collected under an approved QAPP?		X	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		NA	measuring flow of mine discharge
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			Unsure
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		NA	
	If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: A HYDROLOGICAL STUDY OF MINE-SURFACE WATER DISTRIBUTION AND INTERACTIONS IN THE BEAVER CREEK WATERSHED, OTTAWA COUNTY, OK: Thesis				
	Agency/Author: University of Oklahoma, Alissan N. Sutter				
	Publication ID: --				
	Publisher: University of Oklahoma				
	Year Published: 2008				
Data format (Excel, Access, Word, PDF, etc.): PDF					
Criteria		Yes	No	No but justification why still usable	
Overall Conclusions	HHRA can use the data to understand stream/mine discharge flow and its connectivity. It can also be used for background info and CSM.				
			RI	HHRA	Both
	Conclusion - Data are usable for what purpose? (circle one):			X	

Primary Reviewer & date: K. Ma 3/24/16**Secondary Reviewer & date of concurrence:** J. Ynfante 5/11/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: MUSSELS AS PASSIVE WATER FILTERS - Thesis		
		Agency/Author: DAVE HENSLEY		
		Publication ID: --		
		Publisher: UNIVERSITY OF OKLAHOMA GRADUATE COLLEGE		
		Year Published: 2007		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X		mussels
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
	Are specific sampling locations identified?		X	
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X	
	Are all data qualifiers clearly defined?		X	
	Was the data collected under an approved QAPP?		X	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			NA
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		X	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		X	
	If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: MUSSELS AS PASSIVE WATER FILTERS - Thesis				
	Agency/Author: DAVE HENSLEY				
	Publication ID: --				
	Publisher: UNIVERSITY OF OKLAHOMA GRADUATE COLLEGE				
	Year Published: 2007				
	Data format (Excel, Access, Word, PDF, etc.): PDF				
Criteria			Yes	No	No but justification why still usable
Overall Conclusions					
	Conclusion - Data are usable for what purpose? (circle one):				
	RI	HHRA	Both		
			Background		

Primary Reviewer & date: K. Ma 3/31/16

Secondary Reviewer & date of concurrence: J. Ynfante 5/11/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Thesis:Fate and Transport of Contaminants from Mining Waste Materials in Surface and Ground Water Environments		
		Agency/Author: Julie Labar/University of Oklahoma		
		Publication ID: --		
		Publisher: University of Oklahoma		
		Year Published: 2007		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?		X	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		X	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		X	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		X	
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X	
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?	X		
	Are all data qualifiers clearly defined?		X	
	Was the data collected under an approved QAPP?		X	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		X	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		X	
	If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Thesis:Fate and Transport of Contaminants from Mining Waste Materials in Surface and Ground Water Environments		
Agency/Author: Julie Labar/University of Oklahoma			
Publication ID: --			
Publisher: University of Oklahoma			
Year Published: 2007			
Data format (Excel, Access, Word, PDF, etc.): PDF			

Criteria	Yes	No	No but justification why still usable
Overall Conclusions	Data potentially useful. Possibly use for background or procedural decisions. This has a few holes. Not sure how much value it will provide, but can be used for background information. Need to be careful when using analytical data because this was performed by a graduate student and not a certified laboratory.		
	RI	HHRA	Both
Conclusion - Data are usable for what purpose? (circle one):	X		

Primary Reviewer & date: L. Hill 3/25/16

Secondary Reviewer & date of concurrence: K. Rhoades 6/9/2016

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: TAR CREEK OU5 MEETING: SUMMARY NOTES			
		Agency/Author: --			
		Publication ID: --			
		Publisher: --			
		Year Published: 2015			
		Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		NA	NA	
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		NA	(If "No", no further use of data)	
	Were the samples collected within the last 10 years?		NA	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		NA	(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?		NA	NA	
	(For HHRA only) If the data is surface water, is it accessible to receptors?		NA	NA	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		NA	NA	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		NA	NA	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		NA	NA	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		NA	NA	
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?		NA	NA
Are specific sampling locations identified?			NA	NA	
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			NA	NA	
Are all data qualifiers clearly defined?			NA	NA	
Was the data collected under an approved QAPP?			NA	NA	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?		NA		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		NA	NA	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		NA	NA	
	If the data were not validated, is there sufficient data present to perform data validation?		NA	(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: TAR CREEK OU5 MEETING: SUMMARY NOTES			
	Agency/Author: --			
	Publication ID: --			
	Publisher: --			
	Year Published: 2015			
Data format (Excel, Access, Word, PDF, etc.): PDF				
Criteria				
Yes No No but justification why still usable				
Overall Conclusions	Does not appear useful to either RI or HHRA. Provides direction on future reporting. Only useful aspect would be to follow up as to whether or not the reports in the meeting notes were published. Also provides names of people involved.			
	Conclusion - Data are usable for what purpose? (circle one):			
		RI	HHRA	Both

Primary Reviewer & date: K. Ma 3/25/2016**Secondary Reviewer & date of concurrence: K. Rhoades 6/9/2016**

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: Evaluation of Fluvial Transport of Mining Waste In a Reach of Tar Creek, Ottawa County, Oklahoma: Thesis			
		Agency/Author: Dane M Morris			
		Publication ID: --			
		Publisher: University of Oklahoma			
		Year Published: 2010			
		Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)	
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X			
	(For HHRA only) If the data is surface water, is it accessible to receptors?		X		
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		X		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		X		
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		X		
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		X		
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X	X	
Are specific sampling locations identified?		X			
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?				NA	
Are all data qualifiers clearly defined?				NA	
Was the data collected under an approved QAPP?			X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?			NA	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA	
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Evauation of Fluvial Transport of Mining Waste In a Reach of Tar Creek, Ottawa County, Oklahoma: Thesis		
	Agency/Author: Dane M Morris		
	Publication ID: --		
	Publisher: University of Oklahoma		
	Year Published: 2010		
	Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria			
	Yes	No	No but justification why still usable
Overall Conclusions			
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both
	X		

Primary Reviewer & date: H.Mauer 3/24/16

Secondary Reviewer & date of concurrence: K. Rhoades 6/9/2016

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Development and Evaluation of Sediment and Pore-Water Toxicity Thresholds to Support Sediment Quality Assessments in the Tri-State Mining District (TSMD), Missouri, Oklahoma, and Kansas - Volume I: Text		
		Agency/Author: MacDonald Environmental Sciences Ltd./U.S. Geological Survey/CH2M Hill; Donald D. MacDonald, Dawn E. Smorong, Christopher G. Ingersoll, John M. Besser, William G. Brumbaugh, Nile Kemble, Thomas W. May, Christopher D. Ivey, Scott Irving, and Margaret O'Hare		
		Publication ID: MESL-TRI-BIOEVAL-0209-V4		
		Publisher: MacDonald Environmental Sciences Ltd.		
		Year Published: 02/2009		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?		X	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		X	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		X	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		X	
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X	
	Are all data qualifiers clearly defined?		X	
	Was the data collected under an approved QAPP?		X	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		X	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: Development and Evaluation of Sediment and Pore-Water Toxicity Thresholds to Support Sediment Quality Assessments in the Tri-State Mining District (TSMD), Missouri, Oklahoma, and Kansas - Volume I: Text			
		Agency/Author: MacDonald Environmental Sciences Ltd./U.S. Geological Survey/CH2M Hill; Donald D. MacDonald, Dawn E. Smorong, Christopher G. Ingersoll, John M. Besser, William G. Brumbaugh, Nile Kemble, Thomas W. May, Christopher D. Ivey, Scott Irving, and Margaret O'Hare			
		Publication ID: MESL-TRI-BIOEVAL-0209-V4			
		Publisher: MacDonald Environmental Sciences Ltd.			
		Year Published: 02/2009			
		Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria		Yes	No	No but justification why still usable	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		X		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		X		
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)	
Overall Conclusions	Reference document could be useful for determining whether sediments in the tri state mining district are toxic/nontoxic.				
	Conclusion - Data are usable for what purpose? (circle one):		RI	HHRA	Both
		X			

Primary Reviewer & date: L. Hill 3/29/16

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information
Operable Unit 5
Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: Advanced Screening-Level Ecological Risk Assessment (SLERA) for Aquatic Habitats within the Tri-State Mining District, Oklahoma, Kansas, and Missouri, Draft Final Report			
		Agency/Author: MacDonald Environmental Sciences Ltd., USGS, and CH2M Hill			
		Publication ID: MESL-TRI-SLERA-0510-V3			
		Publisher: MacDonald Environmental Sciences Ltd., USGS, and CH2M Hill			
		Year Published: 2010			
		Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl].)	X		(If "No", no further use of data)	
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X			
	(For HHRA only) If the data is surface water, is it accessible to receptors?		X		
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		X		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		X		
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		X		
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		X		
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
Are specific sampling locations identified?		X			
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X			
Are all data qualifiers clearly defined?		X			
Was the data collected under an approved QAPP?		X			
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?	X			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X			
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X			
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data											
		Title of document: Advanced Screening-Level Ecological Risk Assessment (SLERA) for Aquatic Habitats within the Tri-State Mining District, Oklahoma, Kansas, and Missouri, Draft Final Report											
		Agency/Author: MacDonald Environmental Sciences Ltd., USGS, and CH2M Hill											
		Publication ID: MESL-TRI-SLERA-0510-V3											
		Publisher: MacDonald Environmental Sciences Ltd., USGS, and CH2M Hill											
		Year Published: 2010											
		Data format (Excel, Access, Word, PDF, etc.): PDF											
Criteria		Yes	No	No but justification why still usable									
Overall Conclusions	Ecological assessment, but has relevant sediment and surfacewater data that can be used. The checklist indicated no biota consumed by humans, but a brief flip through showed toxicity tables for mussels.												
	<table border="1"> <thead> <tr> <th colspan="2">Conclusion - Data are usable for what purpose? (circle one):</th> <th>RI</th> <th>HHRA</th> <th>Both</th> </tr> </thead> <tbody> <tr> <td colspan="2"></td> <td></td> <td></td> <td>X</td> </tr> </tbody> </table>				Conclusion - Data are usable for what purpose? (circle one):		RI	HHRA	Both				
Conclusion - Data are usable for what purpose? (circle one):		RI	HHRA	Both									
				X									

Primary Reviewer & date: H. Mauer 3/31/16

Secondary Reviewer & date of concurrence: P. Lobos 5/4/16

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Sediment chemistry, toxicity, and bioaccumulation data report for the US Environmental Protection Agency - Department of the Interior sampling of metal-contaminated sediment in the Tri-state Mining District in Missouri, Oklahoma, and Kansas		
		Agency/Author: Columbia Environmental Research Center, United States Geological Survey, and MacDonald Environmental Sciences Ltd.		
		Publication ID: Administrative Report CERC-8335-FY07-20-12		
		Publisher: CERC, USGS, MacDonald Env. Sci.		
		Year Published: 2008		
		Data format: PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X - shellfish, tissues		
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X - month and year, no date		
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?	X		
	Are all data qualifiers clearly defined?	X		
	Was the data collected under an approved QAPP?	X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
	Title of document: Sediment chemistry, toxicity, and bioaccumulation data report for the US Environmental Protection Agency - Department of the Interior sampling of metal-contaminated sediment in the Tri-state Mining District in Missouri, Oklahoma, and Kansas			
	Agency/Author: Columbia Environmental Research Center, United States Geological Survey, and MacDonald Environmental Sciences Ltd.			
	Publication ID: Administrative Report CERC-8335-FY07-20-12			
	Publisher: CERC, USGS, MacDonald Env. Sci.			
	Year Published: 2008			
	Data format: PDF			
Criteria		Yes	No	No but justification why still usable
Overall Conclusions	Useful for FI and HHRA - extensive sediment and biological toxicity data, validated and collected under a QAPP, collected within the last 10 years from the area of interest.			
		Conclusion - Data are usable for what purpose? (circle one):		
		RI	HHRA	Both
				X

Primary Reviewer & date: S. Scott 3/27/16

Secondary Reviewer & date of concurrence: P. Lobos 5/4/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Pore/peep water collected, but probably wouldn't apply as surface water. The tissue samples referred to in the review form are invertebrae tissue, so not representative of what a human would likely consume.

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: REMEDIAL ACTION CONTRACT- U.S. EPA Region 6, Integrated Site Assessment/Investigation Version 2.0		
		Agency/Author: CH2M HILL with Weston Solutions, E2, and Consulting Engineers, Inc.		
		Arrowhead Contracting, Inc.		
		Publication ID: 0034-02005		
		Publisher: CH2M HILL		
		Year Published: 2012		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?		X	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		X	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		X	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		X	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		X	
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?			X	
Are specific sampling locations identified?		X		
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X		
Are all data qualifiers clearly defined?		X		
Was the data collected under an approved QAPP?		X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		X	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: REMEDIAL ACTION CONTRACT- U.S. EPA Region 6, Integrated Site Assessment/Investigation Version 2.0				
	Agency/Author: CH2M HILL with Weston Solutions, E2, and Consulting Engineers, Inc.				
	Arrowhead Contracting, Inc.				
	Publication ID: 0034-02005				
	Publisher: CH2M HILL				
	Year Published: 2012				
	Data format (Excel, Access, Word, PDF, etc.): PDF				
Criteria			Yes	No	No but justification why still usable
Overall Conclusions					
	Conclusion - Data are usable for what purpose? (circle one):				
	RI	HHRA	Both		
			X		

Primary Reviewer & date: K. Ma 3/25/2016

Secondary Reviewer & date of concurrence: P. Lobos 5/4/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: FINAL Jasper County Superfund Site Baseline Ecological Risk Assessment (ERA) Jasper County, Missouri			
		Agency/Author: BLACK & VEATCH Special Projects Corp			
		Publication ID: 40178830			
		Publisher: Region 7 USEPA			
		Year Published: 1998			
		Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X			(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X			
	(For HHRA only) If the data is surface water, is it accessible to receptors?	X			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?				
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?	X			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?	X			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X			
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.				
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X			
	Are specific sampling locations identified?	X			
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?	X			
	Are all data qualifiers clearly defined?	X			
	Was the data collected under an approved QAPP?	X			
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?	X			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X			
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X			
	If the data were not validated, is there sufficient data present to perform data validation?	X			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data																		
	Title of document: FINAL Jasper County Superfund Site Baseline Ecological Risk Assessment (ERA) Jasper County, Missouri																		
	Agency/Author: BLACK & VEATCH Special Projects Corp																		
	Publication ID: 40178830																		
	Publisher: Region 7 USEPA																		
	Year Published: 1998																		
Data format (Excel, Access, Word, PDF, etc.): PDF																			
Criteria																			
<table border="1"> <thead> <tr> <th></th> <th>Yes</th> <th>No</th> <th>No but justification why still usable</th> </tr> </thead> <tbody> <tr> <td>Overall Conclusions</td> <td colspan="3">Data collected outside of the six exposure areas and data older than 10 years.</td> </tr> <tr> <td></td> <td colspan="3">Conclusion - Data are usable for what purpose? (circle one):</td> </tr> <tr> <td></td> <td>RI</td> <td>HHRA</td> <td>Both</td> </tr> </tbody> </table>					Yes	No	No but justification why still usable	Overall Conclusions	Data collected outside of the six exposure areas and data older than 10 years.				Conclusion - Data are usable for what purpose? (circle one):				RI	HHRA	Both
	Yes	No	No but justification why still usable																
Overall Conclusions	Data collected outside of the six exposure areas and data older than 10 years.																		
	Conclusion - Data are usable for what purpose? (circle one):																		
	RI	HHRA	Both																

Primary Reviewer & date: H. Mauer 4/4/16

Secondary Reviewer & date of concurrence: P. Lobos 7/13/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Area-Wide Human Health Risk Assessment for the Jasper County Superfund Site, Jasper County, MO		
		Agency/Author: Missouri Department of Health Bureau of Environmental Epidemiology		
		Publication ID: 40114576		
		Publisher: Region 7 USEPA		
		Year Published: 1995		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?	X		
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?	X		
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?	X		
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X		
Are specific sampling locations identified?		X		
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X		
Are all data qualifiers clearly defined?		X		
Was the data collected under an approved QAPP?		X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Area-Wide Human Health Risk Assessment for the Jasper County Superfund Site, Jasper County, MO		
	Agency/Author: Missouri Department of Health Bureau of Environmental Epidemiology		
	Publication ID: 40114576		
	Publisher: Region 7 USEPA		
	Year Published: 1995		
	Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria			
	Yes	No	No but justification why still usable
Overall Conclusions	Data older than 10 years.		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both
		X	

Primary Reviewer & date: H. Mauer 4/7/16

background only

Secondary Reviewer & date of concurrence: P. Lobos 7/13/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Final Ecological Risk Assessment For Cherokee County, Kansas, CERCLA Site, Baxter Springs/Treece Subsites.		
		Agency/Author: Dames and Moore		
		Publication ID: 213046		
		Publisher: Dames and Moore		
		Year Published:1993		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?	X		
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?	X		
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?	X		
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		X	
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X		
Are specific sampling locations identified?		X		
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X		
Are all data qualifiers clearly defined?			X	
Was the data collected under an approved QAPP?		X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			Unknown
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		X	
	If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Final Ecological Risk Assessment For Cherokee County, Kansas, CERCLA Site, Baxter Springs/Treece Subsites.		
	Agency/Author: Dames and Moore		
	Publication ID: 213046		
	Publisher: Dames and Moore		
	Year Published:1993		
	Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria			
	Yes	No	No but justification why still usable
Overall Conclusions			
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both
			X

Primary Reviewer & date: H. Mauer 4/12/2016

background only

Secondary Reviewer & date of concurrence: J. Ynfante 5/11/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: A screening-level assessment of lead, cadmium, and zinc in fish and crayfish from Northeastern Oklahoma, USA		
		Agency/Author: USGS		
		Publication ID: DOI 10.1007/s10653-006-9050-4		
		Publisher: Environ Geochem Health 28:445-471		
		Year Published: 6/22/2006		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X - 2006		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?	NA		
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	NA		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?	NA		
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?	NA		
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X		
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?	X		
	Are all data qualifiers clearly defined?	X		
	Was the data collected under an approved QAPP?	X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: A screening-level assessment of lead, cadmium, and zinc in fish and crayfish from Northeastern Oklahoma, USA				
	Agency/Author: USGS				
	Publication ID: DOI 10.1007/s10653-006-9050-4				
	Publisher: Environ Geochem Health 28:445-471				
	Year Published: 6/22/2006				
	Data format (Excel, Access, Word, PDF, etc.): PDF				
Criteria					
			Yes	No	No but justification why still usable
Overall Conclusions					
	Conclusion - Data are usable for what purpose? (circle one):				
	RI	HHRA	Both		
			X		

Primary Reviewer & date: R. Eastin 3-21-16

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Residual effects of lead and zinc mining on freshwater mussels in the Spring River Basin (Kansas, Missouri, and Oklahoma, USA)		
		Agency/Author: Robert T. Angelo, M. Steve Cringan, Diana L. Chamberlain, Anthony J. Stahl, Stephen G. Haslouer, Clint A. Goodrich		
		Publication ID: --		
		Publisher: Science of the Total Environment		
		Year Published: 2007		
		Data format (Excel, Access, Word, PDF, etc.): PDF, PPT converted to PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X		Mussels
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X		
Are specific sampling locations identified?		X		
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X		
Are all data qualifiers clearly defined?		X		
Was the data collected under an approved QAPP?			X	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		X	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		Data not validated - but sufficient data for validation.

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data								
		Title of document: Residual effects of lead and zinc mining on freshwater mussels in the Spring River Basin (Kansas, Missouri, and Oklahoma, USA)								
		Agency/Author: Robert T. Angelo, M. Steve Cringan, Diana L. Chamberlain, Anthony J. Stahl, Stephen G. Haslouer, Clint A. Goodrich								
		Publication ID: --								
		Publisher: Science of the Total Environment								
		Year Published: 2007								
		Data format (Excel, Access, Word, PDF, etc.): PDF, PPT converted to PDF								
Criteria		Yes	No	No but justification why still usable						
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)						
Overall Conclusions		<table border="1"> <thead> <tr> <th>RI</th> <th>HHRA</th> <th>Both</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>X</td> </tr> </tbody> </table>			RI	HHRA	Both			X
RI	HHRA	Both								
		X								
		Conclusion - Data are usable for what purpose? (circle one):								

Primary Reviewer & date: H. Mauer 4/12/16

Secondary Reviewer & date of concurrence: P. Lobos 5/4/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document : Damage Assessment Plan for Jasper and Newton Counties, Missouri			
		Agency/Author: Alix van Geel, Tina Bosch, Heidi Clark, and Mike Donlan Industrial Economics, Incorporated			
		Publication ID: --			
		Publisher: --			
		Year Published: June 2009			
		Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)	
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?		N/A		
	(For HHRA only) If the data is surface water, is it accessible to receptors?		N/A		
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		N/A		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		N/A		
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		N/A		
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		N/A		
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?		N/A	
Are specific sampling locations identified?			N/A		
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			N/A		
Are all data qualifiers clearly defined?			N/A		
Was the data collected under an approved QAPP?			N/A		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?		N/A		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		N/A		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		N/A		
	If the data were not validated, is there sufficient data present to perform data validation?		N/A	(If "No", then no further use of data)	

Tar Creek Superfund Site, Ottawa County, Oklahoma

Notes:

- CSM - Conceptual Site Model
- HHRA - Human Health Risk Assessment
- N&E - Nature and Extent
- QAPP - Quality Assurance Project Plan
- RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Streamflow, Water Quality, and Metal Loads from Chat Leachate and Mine Outflow into Tar Creek, Ottawa County, Oklahoma 2005		
		Agency/Author: By Caleb C. Cope, Mark F. Becker, William J. Andrews, and Kelli DeHay		
		Publication ID: Scientific Investigations Report 2007-5115		
		Publisher: USGS (Prepared in cooperation with the U. S. EPA)		
		Year Published: 2008		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Four Mile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?	X		
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?	X		
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?	X		
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X		
Are specific sampling locations identified?		X		
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X		
Are all data qualifiers clearly defined?		X		
Was the data collected under an approved QAPP?		X		USGS/USEPA
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		Does not state, but is a USEPA document
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: Streamflow, Water Quality, and Metal Loads from Chat Leachate and Mine Outflow into Tar Creek, Ottawa County, Oklahoma 2005				
Agency/Author: By Caleb C. Cope, Mark F. Becker, William J. Andrews, and Kelli DeHay					
Publication ID: Scientific Investigations Report 2007–S115					
Publisher: USGS (Prepared in cooperation with the U. S. EPA)					
Year Published: 2008					
Data format (Excel, Access, Word, PDF, etc.): PDF					
Criteria					
Yes No No but justification why still usable					
Overall Conclusions					
	Conclusion - Data are usable for what purpose? (circle one):				
			RI	HHRA	Both
					X

Primary Reviewer & date: H. Mauer 3/23/16**Secondary Reviewer & date of concurrence:** J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Sources and fates of heavy metals in a mining-impacted stream: Temporal variability and the role of iron oxides		
		Agency/Author: Laurel A. Schaider, David B. Senn		
		Publication ID: --		
		Publisher: Science of the Total Environment		
		Year Published: 2014		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			Not sure. No tabulated data
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			Not sure. No tabulated data
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			Not sure. No tabulated data
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			Not sure. No tabulated data
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			Not sure. No tabulated data
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X	
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X	
	Are all data qualifiers clearly defined?		X	
	Was the data collected under an approved QAPP?		X	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		X	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		X	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		X	
	If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Sources and fates of heavy metals in a mining-impacted stream: Temporal variability and the role of iron oxides		
	Agency/Author: Laurel A. Schaider, David B. Senn		
	Publication ID: --		
	Publisher: Science of the Total Environment		
	Year Published: 2014		
Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria			
Overall Conclusions	No tabulated data, no qualifiers, not sure if validated.		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both
	X		

Primary Reviewer & date: H. Mauer 3/23/16

Secondary Reviewer & date of concurrence: J. Ynfante 5/11/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Tribal Overview Tar Creek Superfund. Tri-State Mining District Forum - PowerPoint Slides		
		Agency/Author: Meredith Garvin		
		Publication ID: --		
		Publisher: Tribal Environmental Management Services		
		Year Published: 2005		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		NA	NA
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		NA	(If "No", no further use of data)
	Were the samples collected within the last 10 years?		NA	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		NA	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?		NA	
	(For HHRA only) If the data is surface water, is it accessible to receptors?		NA	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		NA	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		NA	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		NA	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		NA	
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?			NA	NA
Are specific sampling locations identified?			NA	NA
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			NA	NA
Are all data qualifiers clearly defined?			NA	NA
Was the data collected under an approved QAPP?			NA	NA
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		NA	NA
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		NA	NA
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		NA	NA
	If the data were not validated, is there sufficient data present to perform data validation?		NA	(If "No", then no further use of data)

Operable Unit 5

General	General Information about the document or data					
	Title of document: Tribal Overview Tar Creek Superfund. Tri-State Mining District Forum - PowerPoint Slides					
	Agency/Author: Meredith Garvin					
	Publication ID: --					
	Publisher: Tribal Environmental Management Services					
	Year Published: 2005					
	Data format (Excel, Access, Word, PDF, etc.): PDF					
<div> Criteria <div> Yes No No but justification why still usable </div> </div>						
Overall Conclusions						
	Conclusion - Data are usable for what purpose? (circle one):			RI	HHRA	Both
				X		

Primary Reviewer & date: H. Mauer 4/5/16

Secondary Reviewer & date of concurrence: K. Rhoades 6/9/2016

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

background only

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: Quapaw Tribe of Oklahoma Surface Water Quality data			
		Agency/Author: STORET			
		Publication ID: --			
		Publisher: --			
		Year Published: 2016			
		Data format (Excel, Access, Word, PDF, etc.): Access			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)	
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X			
	(For HHRA only) If the data is surface water, is it accessible to receptors?	X			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?	X			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?	X			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X			
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
Are specific sampling locations identified?		X			
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X			
Are all data qualifiers clearly defined?		X			
Was the data collected under an approved QAPP?		X			
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?	X			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X			
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X			
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: Quapaw Tribe of Oklahoma Surface Water Quality data			
	Agency/Author: STORET			
	Publication ID: --			
	Publisher: --			
	Year Published: 2016			
	Data format (Excel, Access, Word, PDF, etc.): Access			
Criteria				
		Yes	No	No but justification why still usable
Overall Conclusions	This database includes a significant amount of data from the Tar Creek area collected as recently as 2002. However, the significant number of unknowns regarding the data, including the inability to confirm data validation, as well as the fact that the data is 14+ years old leads me to believe that this data could only be used as background information at most.			
	Conclusion - Data are usable for what purpose? (circle one):			
	RI	HHRA	Both	
			X	

Primary Reviewer & date: K. Waltermire

Secondary Reviewer & date of concurrence: J. Ynfante 6/3/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: Wyandotte Nation of Oklahoma CWA Section 106 Grants			
		Agency/Author: STORET			
		Publication ID: --			
		Publisher: --			
		Year Published: 2016			
		Data format (Excel, Access, Word, PDF, etc.): Access			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)	
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X			
	(For HHRA only) If the data is surface water, is it accessible to receptors?	X			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?	X			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?	X			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X			
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
Are specific sampling locations identified?		X			
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X			
Are all data qualifiers clearly defined?		X			
Was the data collected under an approved QAPP?		X			
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?	X			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X			
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X			
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: Wyandotte Nation of Oklahoma CWA Section 106 Grants			
	Agency/Author: STORET			
	Publication ID: --			
	Publisher: --			
	Year Published: 2016			
	Data format (Excel, Access, Word, PDF, etc.): Access			
Criteria				
		Yes	No	No but justification why still usable
Overall Conclusions	This database includes a significant amount of data from the Tar Creek area collected as recently as 2002. However, the significant number of unknowns regarding the data, including the inability to confirm data validation, as well as the fact that the data is 14+ years old leads me to believe that this data could only be used as background information at most.			
	Conclusion - Data are usable for what purpose? (circle one):			
	RI	HHRA	Both	
			X	

Primary Reviewer & date: K. Waltermire

Secondary Reviewer & date of concurrence: J. Ynfante 6/3/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: Eastern Shawnee Tribe of Oklahoma CWA Section 106 Grants			
		Agency/Author: STORET			
		Publication ID: --			
		Publisher: --			
		Year Published: 2016			
		Data format (Excel, Access, Word, PDF, etc.): Access			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)	
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X			
	(For HHRA only) If the data is surface water, is it accessible to receptors?	X			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?	X			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?	X			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X			
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
Are specific sampling locations identified?		X			
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X			
Are all data qualifiers clearly defined?		X			
Was the data collected under an approved QAPP?		X			
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?	X			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X			
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X			
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data						
	Title of document: Eastern Shawnee Tribe of Oklahoma CWA Section 106 Grants						
	Agency/Author: STORET						
	Publication ID: --						
	Publisher: --						
	Year Published: 2016						
	Data format (Excel, Access, Word, PDF, etc.): Access						
Criteria			Yes	No	No but justification why still usable		
Overall Conclusions	This database includes a significant amount of data from the Tar Creek area collected as recently as 2002. However, the significant number of unknowns regarding the data, including the inability to confirm data validation, as well as the fact that the data is 14+ years old leads me to believe that this data could only be used as background information at most.						
	Conclusion - Data are usable for what purpose? (circle one):						
	RI	HHRA	Both				
							X

Primary Reviewer & date: K. Waltermire

Secondary Reviewer & date of concurrence: J. Ynfante 6/3/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Watershed Plan Report for Tar Creek OU4: Tech Memo		
		Agency/Author: Judith Ibarra-Bianchetta and Brad Hudgens		
		Publication ID: --		
		Publisher: CH2M HILL		
		Year Published: 2009		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?	X		
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		X	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		X	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		X	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		X	
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			NA
	Are all data qualifiers clearly defined?			NA
	Was the data collected under an approved QAPP?	X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			NA
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		NA	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		NA	
	If the data were not validated, is there sufficient data present to perform data validation?		NA	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Watershed Plan Report for Tar Creek OU4: Tech Memo		
Agency/Author: Judith Ibarra-Bianchetta and Brad Hudgens			
Publication ID: --			
Publisher: CH2M HILL			
Year Published: 2009			
Data format (Excel, Access, Word, PDF, etc.): PDF			

Criteria	Yes	No	No but justification why still usable

Overall Conclusions	Hydrology model. No attached data.		
	Conclusion - Data are usable for what purpose? (circle one):		

RI	HHRA	Both
X		

Primary Reviewer & date: H. Mauer 3/24/16

Background only

Secondary Reviewer & date of concurrence: P. Lobos 7/13/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of Document: Fish Consumption Guide for the Tar Creek area including Grand Lake - Fact Sheet		
		Agency/Author: Oklahoma Department of Environmental Quality		
		Publication ID: --		
		Publisher: ODEQ		
		Year Published: 2008		
		Data Format: TCArea-GrandLake_FishConsumptionGuide-200809.pdf		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		NA	See Fish Tissues Metals Analysis studies in Data Gap Collection
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		Fish
	Were the samples collected within the last 10 years?	X		2008
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		Tar Creek Area, including Grand Lake
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X		Fish
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		See Fish Tissues Metals Analysis studies in Data Gap Collection
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?	X		
	Are all data qualifiers clearly defined?	X		
	Was the data collected under an approved QAPP?	X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		See Fish Tissues Metals Analysis studies in Data Gap Collection
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		See Fish Tissues Metals Analysis studies in Data Gap Collection
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of Document: Fish Consumption Guide for the Tar Creek area including Grand Lake - Fact Sheet		
Agency/Author: Oklahoma Department of Environmental Quality			
Publication ID: --			
Publisher: ODEQ			
Year Published: 2008			
Data Format: TCArea-GrandLake_FishConsumptionGuide-200809.pdf			

Criteria	Yes	No	No but justification why still usable
Overall Conclusions	Fish consumption guide provided by TCEQ based on lead concentrations detected in the various fish types at multiple water bodies. Background.		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both
			X

Primary Reviewer & date: R. Eastin 4-1-16

Secondary Reviewer & date of concurrence: J. Ynfante 5/11/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of Document: DEQ Discourages Eating Whole Fish From Tar Creek Area: Fish Fillets are Safe - News Release		
		Agency/Author: Oklahoma Department of Environmental Quality		
		Publication ID: --		
		Publisher: Oklahoma Department of Environmental Quality		
		Year Published: 2003		
		Data Format: PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		See Fish Tissues Metals Analysis studies in Data Gap Collection
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		Fish
	Were the samples collected within the last 10 years?		X	2003
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		Spring and Neosho Rivers and tributaries
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?		X	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		X	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		X	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		X	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X		Various fish
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		No data is presented in the article. It refers to the Fish Tissues Metals Analysis studies that we have in the Data Gap collection, which has this information.
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?	X		
	Are all data qualifiers clearly defined?	X		
	Was the data collected under an approved QAPP?	X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		See Fish Tissues Metals Analysis studies in Data Gap Collection
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			See Fish Tissues Metals

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of Document: DEQ Discourages Eating Whole Fish From Tar Creek Area: Fish Fillets are Safe - News Release		
		Agency/Author: Oklahoma Department of Environmental Quality		
		Publication ID: --		
		Publisher: Oklahoma Department of Environmental Quality		
		Year Published: 2003		
		Data Format: PDF		
Criteria				
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	Yes	No	No but justification why still usable
	If the data were not validated, is there sufficient data present to perform data validation?			Analysis studies in Data Gap Collection (if "No", then no further use of data)
Overall Conclusions	This document is a summary/press release of the Fish Tissues Metals Analysis studies, also in Data Gap Collection. Results can be verified with this document, however this is basically a duplicate, with the data summerized for the study. May be useful to track information that has been released to the public.			
	Conclusion - Data are usable for what purpose? (circle one):		RI	HHRA
		X		

Primary Reviewer & date: R. Eastin 4-1-16

Secondary Reviewer & date of concurrence: J. Ynfante 5/11/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of Document: Fish Tissue Metals Analysis in the Tri-State Mining Area, FY 2003, Final Report		
		Agency/Author: State of Oklahoma Department of Environmental Quality Customer Services Division		
		Publication ID: I-006400-01 FY03/04 Carryover Project #8 (Task006)		
		Publisher: PODEQ Customer Services Division		
		Year Published: 2003		
		Data Format: PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		Metals impacts on fish
	Were the samples collected within the last 10 years?		X	2003
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		Spring and Neosho Rivers and their tributaries (particular Tar Creek)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			
	(For HHRA only) If the data is surface water, is it accessible to receptors?		X	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		X	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		X	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		X	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X		Fish
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		Sampling was done in 2002, specific dates are not used
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?	X		
	Are all data qualifiers clearly defined?	X		
	Was the data collected under an approved QAPP?	X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		However, the report suggests the lower reporting limits be modified to 0.15 mg/kg range for lead and cadmium .
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of Document: Fish Tissue Metals Analysis in the Tri-State Mining Area, FY 2003, Final Report		
		Agency/Author: State of Oklahoma Department of Environmental Quality Customer Services Division		
		Publication ID: I-006400-01 FY03/04 Carryover Project #8 (Task006)		
		Publisher: PODEQ Customer Services Division		
		Year Published: 2003		
		Data Format: PDF		
Criteria		Yes	No	No but justification why still usable
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		Validation is assumed, due to the author being ODEQ
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		Validation is assumed, due to the author being ODEQ
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)
Overall Conclusions		This data seems to be valuable for the impact of eating fish from the Tar Creek streams. It would likely still apply, even though the research was done more that 10 years ago.		
		RI	HHRA	Both
		X		

Primary Reviewer & date: R. Eastin 4-1-16

Secondary Reviewer & date of concurrence: J. Ynfante 5/11/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Fish Tissue Metals Analysis in the Tri-State Mining Area Follow-up Study, Final Report		
		Agency/Author: Oklahoma Department of Environmental Quality Customer Services Division		
		Publication ID: --		
		Publisher: STATE OF OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY		
		Year Published: 2006		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X		Fish
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X	
	Are specific sampling locations identified?		X	
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			
	Are all data qualifiers clearly defined?			
	Was the data collected under an approved QAPP?			
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		X	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Fish Tissue Metals Analysis in the Tri-State Mining Area Follow-up Study, Final Report		
	Agency/Author: Oklahoma Department of Environmental Quality Customer Services Division		
	Publication ID: --		
	Publisher: STATE OF OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY		
	Year Published: 2006		
	Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria			
		Yes	No
		No but justification why still usable	
Overall Conclusions			
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both
		X	

Primary Reviewer & date: K. Ma 3/31/2016

Secondary Reviewer & date of concurrence: P. Lobos 5/4/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: The Spokane Tribe's multipathway Subsistence Exposure Scenario and Screening Level RME			
		Agency/Author: Barbara L. Harper, Brian Flett, Stuart Harris, Corn Abeyta, Fred Kirschner			
		Publication ID: --			
		Publisher: Risk Analysis			
		Year Published: 2002			
		Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)	
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			NA	
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA	
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?			NA
Are specific sampling locations identified?				NA	
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?				NA	
Are all data qualifiers clearly defined?				NA	
Was the data collected under an approved QAPP?				NA	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?			NA	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA	
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: The Spokane Tribe's multipathway Subsistence Exposure Scenario and Screening Level RME		
	Agency/Author: Barbara L. Harper, Brian Flett, Stuart Harris, Corn Abeyta, Fred Kirschner		
	Publication ID: --		
	Publisher: Risk Analysis		
	Year Published: 2002		
Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria			
Overall Conclusions			
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both
		X	

Primary Reviewer & date: H. Mauer 4/13/16

background

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Surface-Water Quality in the Grand-Neosho River Basin, Northeastern Oklahoma, Draft Final Report		
		Agency/Author: Oklahoma Department of Environmental Quality		
		Publication ID: QTRAK#04-505		
		Publisher: ODEQ		
		Year Published: 2008		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		X	
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?	X		
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?	X		
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		X	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X		Fish
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X		
Are specific sampling locations identified?		X		
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			X	data is shown in graph f
Are all data qualifiers clearly defined?			X	
Was the data collected under an approved QAPP?		X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: Surface-Water Quality in the Grand-Neosho River Basin, Northeastern Oklahoma, Draft Final Report				
	Agency/Author: Oklahoma Department of Environmental Quality				
	Publication ID: QTRAK#04-505				
	Publisher: ODEQ				
	Year Published: 2008				
	Data format (Excel, Access, Word, PDF, etc.): PDF				
Criteria		Yes	No	No but justification why still usable	
Overall Conclusions					
	Conclusion - Data are usable for what purpose? (circle one):		RI	HHRA	Both
			X		

Primary Reviewer & date: H.Mauer 3/22/16

Secondary Reviewer & date of concurrence: J. Ynfante 6/3/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of Document: Occurrence and Trends of Selected Chemical Constituents in Bottom Sediment, Grand Lake O' the Cherokees, Northeast Oklahoma, 1940-2008		
		Agency/Author: USGS; Kyle E. Juracek and Mark F. Becker		
		Publication ID: Scientific Investigations Report 2009-5258		
		Publisher: U.S. Department of the Interior; U.S. Geological Survey		
		Year Published: 2009		
		Data Format: PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?	X		
	Are all data qualifiers clearly defined?	X		
	Was the data collected under an approved QAPP?	X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of Document: Occurrence and Trends of Selected Chemical Constituents in Bottom Sediment, Grand Lake O' the Cherokees, Northeast Oklahoma, 1940-2008		
	Agency/Author: USGS; Kyle E. Juracek and Mark F. Becker		
	Publication ID: Scientific Investigations Report 2009-5258		
	Publisher: U.S. Department of the Interior; U.S. Geological Survey		
	Year Published: 2009		
	Data Format: PDF		
Criteria	Yes	No	No but justification why still usable
Overall Conclusions	This report includes data for lake bottom sediments at Grand Lake. Assessments of cadmium, lead, and zinc are provided from 1940 to 2008. Data is of high quality and validated.		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both
	X		

Primary Reviewer & date: S. Scott 3/26/16

Secondary Reviewer & date of concurrence: J. Ynfante 5/11/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Selected Metals in Sediments and Streams in the Oklahoma Part of the Tri-State Mining District, 2000–2006		
		Agency/Author: William J. Andrews, Mark F. Becker, Shana L. Mashburn, and S. Jerrod Smith/U.S. Geological Survey		
		Publication ID: Scientific Investigations Report 2009–5032		
		Publisher: U.S. Geological Survey		
		Year Published 2008		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?		X	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		X	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		X	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?	X		
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		X	
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X	
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X	
	Are all data qualifiers clearly defined?		X	
	Was the data collected under an approved QAPP?		X	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		X	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		X	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		X	
	If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Selected Metals in Sediments and Streams in the Oklahoma Part of the Tri-State Mining District, 2000–2006		
	Agency/Author: William J. Andrews, Mark F. Becker, Shana L. Mashburn, and S. Jerrod Smith/U.S. Geological Survey		
	Publication ID: Scientific Investigations Report 2009–5032		
	Publisher: U.S. Geological Survey		
	Year Published 2008		
	Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria			
	Yes	No	No but justification why still usable
Overall Conclusions	Reference document would be useful if the analytical results were available.		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both
	X		

Primary Reviewer & date: L. Hill 3/29/16**Secondary Reviewer & date of concurrence:** J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Importance of Tribal Resources to Tribal Members and Damages in the TSMD		
		Agency/Author: Tribal Environmental Management Services/ Meredith Garvin		
		Publication ID: --		
		Publisher: --		
		Year Published: 2009		
		Data format (Excel, Access, Word, PDF, etc.): PDF/Powerpoint		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		NA	
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		NA	(If "No", no further use of data)
	Were the samples collected within the last 10 years?		NA	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?		NA	NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		NA	NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		NA	NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		NA	NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		NA	NA
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		NA	
	Are specific sampling locations identified?		NA	
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		NA	
	Are all data qualifiers clearly defined?		NA	
	Was the data collected under an approved QAPP?		NA	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		NA	NA
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		NA	NA
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		NA	NA
	If the data were not validated, is there sufficient data present to perform data validation?		NA	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Importance of Tribal Resources to Tribal Members and Damages in the TSMD		
Agency/Author: Tribal Environmental Management Services/ Meredith Garvin			
Publication ID: --			
Publisher: --			
Year Published: 2009			
Data format (Excel, Access, Word, PDF, etc.): PDF/Powerpoint			

Criteria	Yes	No	No but justification why still usable
Overall Conclusions	Presentation can be used for background information on tribes and their concerns. Based on the presentation, a study was performed, but there are no data in this presentation.		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both
		X	

Primary Reviewer & date: K. Ma 3/28/2016- brief overview of past USGS sampling with cultural background.**Secondary Reviewer & date of concurrence:** K. Rhoades - 6/9/2016.

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: DRAFT: Feasibility Study Report - Tar Creek OU4 RI/FS Program		
		Agency/Author: AATA International, Inc.		
		Publication ID: --		
		Publisher: U.S. Environmental Protection Agency		
		Year Published: 12/2005		
		Data format (Excel, Access, Word, PDF, etc.): Word		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).			(If "No", no further use of data)
	Were the samples collected within the last 10 years?			(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?			
	Are specific sampling locations identified?			
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			
	Are all data qualifiers clearly defined?			
	Was the data collected under an approved QAPP?			
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: DRAFT: Feasibility Study Report - Tar Creek OU4 RI/FS Program		
	Agency/Author: AATA International, Inc.		
	Publication ID: --		
	Publisher: U.S. Environmental Protection Agency		
	Year Published: 12/2005		
	Data format (Excel, Access, Word, PDF, etc.): Word		
Criteria			
Yes No No but justification why still usable			
Overall Conclusions	This reference document does not present any data. Discusses previous sample collection of sediments and surface water and the development of potential remedial actions.		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both

Primary Reviewer & date: L. Hill 3/25/16

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Background only

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Tar Creek Hydrologic StudyTri-State Mining District		
		Agency/Author: --		
		Publication ID: --		
		Publisher: --		
		Year Published: 2009		
		Data format (Excel, Access, Word, PDF, etc.): Powerpoint/PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X	
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			NA
	Are all data qualifiers clearly defined?			NA
	Was the data collected under an approved QAPP?			NA
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			NA
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: Tar Creek Hydrologic Study/Tri-State Mining District			
	Agency/Author: --			
	Publication ID: --			
	Publisher: --			
	Year Published: 2009			
	Data format (Excel, Access, Word, PDF, etc.): Powerpoint/PDF			
Criteria	Yes	No	No but justification why still usable	
Overall Conclusions	This powerpoint/PDF studies the hydrology between the local aquifers, mine pools, and tailings. Once the full document is located, it can be used towards background info and RI components			
		RI	HHRA	Both
	Conclusion - Data are usable for what purpose? (circle one):			
	X			

Primary Reviewer & date: K. Ma 3/24/2016

Secondary Reviewer & date of concurrence: J. Ynfante 5/11/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Assessment of the Spatial Distribution of Selected Metals Concentrations in Stream Sediment Within the TriState Mining District, Kansas, Missouri, and Oklahoma - Power Point Presentation		
		Agency/Author: USGS		
		Publication ID: --		
		Publisher: --		
		Year published: 2007		
		Data format (Excel, Access, Word, PDF, etc.): PPT		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl].	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			N/A no data provided
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X	
	Are specific sampling locations identified?		X	
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X	
	Are all data qualifiers clearly defined?		X	
	Was the data collected under an approved QAPP?	X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			N/A
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			N/A
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			N/A
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Assessment of the Spatial Distribution of Selected Metals Concentrations in Stream Sediment Within the TriState Mining District, Kansas, Missouri, and Oklahoma - Power Point Presentation		
	Agency/Author: USGS		
	Publication ID: --		
	Publisher: --		
	Year published: 2007		
	Data format (Excel, Access, Word, PDF, etc.): PPT		

Criteria	Yes	No	No but justification why still usable						
Overall Conclusions	This is a pdf of a powerpoint describing a proposed sampling effort, no data is provided in the document. If data can be obtained possibly used for more than background.								
Conclusion - Data are usable for what purpose? (circle one):									
<table border="1"><thead><tr><th>RI</th><th>HHRA</th><th>Both</th></tr></thead><tbody><tr><td></td><td></td><td>X</td></tr></tbody></table>				RI	HHRA	Both			X
RI	HHRA	Both							
		X							

Primary Reviewer & date: S. Scott 3/27/16

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of Document: Overview of the Spring River Floodplain Sampling Activities in Kansas - PowerPoint Presentation		
		Agency/Author: EPA Region 7, Dave Drake		
		Publication ID: --		
		Publisher: EPA		
		Year Published: 2009		
		Data Format: PPT Presentation		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?			N/A
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			N/A
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X	
	Are specific sampling locations identified?		X	
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X	
	Are all data qualifiers clearly defined?		X	
	Was the data collected under an approved QAPP?		X	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		X	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		X	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		X	
	If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of Document: Overview of the Spring River Floodplain Sampling Activities in Kansas - PowerPoint Presentation				
	Agency/Author: EPA Region 7, Dave Drake				
	Publication ID: --				
	Publisher: EPA				
	Year Published: 2009				
	Data Format: PPT Presentation				
Criteria					
		Yes	No	No but justification why still usable	
Overall Conclusions	The document is a description of upcoming sampling efforts for the Spring River Basin, no actual results are presented.				
	Conclusion - Data are usable for what purpose? (circle one):			RI	HHRA

Primary Reviewer & date: S. Scott 3/26/16

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Frequently Asked Questions About Ecological Revitalization of Superfund Sites - Fact Sheet		
		Agency/Author: US EPA		
		Publication ID: --		
		Publisher: US EPA		
		Year Published: 2006		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?			NA
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).			NA (If "No", no further use of data)
	Were the samples collected within the last 10 years?			NA (If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).			NA (If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			NA
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?			NA
	Are specific sampling locations identified?			NA
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			NA
	Are all data qualifiers clearly defined?			NA
	Was the data collected under an approved QAPP?			NA
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			NA
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA
	If the data were not validated, is there sufficient data present to perform data validation?			NA (If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: Frequently Asked Questions About Ecological Revitalization of Superfund Sites - Fact Sheet				
	Agency/Author: US EPA				
	Publication ID: --				
	Publisher: US EPA				
	Year Published: 2006				
Data format (Excel, Access, Word, PDF, etc.): PDF					
Criteria		Yes	No	No but justification why still usable	
Overall Conclusions	FAQ - no samples taken				
	Conclusion - Data are usable for what purpose? (circle one):		RI	HHRA	Both

Primary Reviewer & date: K. Ma 4/4/2016

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: WATER QUALITY CHARACTERISTICS OF SEEPAGE AND RUNOFF AT TWO TAILINGS PILES IN THE PICHER FIELD OTTAWA COUNTY, OKLAHOMA		
		Agency/Author: OKLAHOMA WATER RESOURCES BOARD- Water Quality Division		
		Publication ID: --		
		Publisher: OKLAHOMA WATER RESOURCES BOARD- Water Quality Division		
		Year Published: 1983		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X, however Tar Creek is the principal drainage system for Picher Field	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?	X		
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		X	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		NA	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		NA	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		NA	
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X Analytical Method not included	
	Are specific sampling locations identified?		X	
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			NA
	Are all data qualifiers clearly defined?		X	
	Was the data collected under an approved QAPP?	X approved work plan		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		X	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			Unsure
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?		NA	(If "No", then no further use of data)
Overall Conclusions	This document addresses metal conc. and tailing volume in Picher Field- can be used for background information since Tar Creek is the main drainage system. *Note- Sampling validation issues occur in this study. However, large sampling errors arose during this study. Samples with validity issues were rejected and not included in this report.			

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: WATER QUALITY CHARACTERISTICS OF SEEPAGE AND RUNOFF AT TWO TAILINGS PILES IN THE PICHER FIELD OTTAWA COUNTY, OKLAHOMA		
	Agency/Author: OKLAHOMA WATER RESOURCES BOARD- Water Quality Division		
	Publication ID: --		
	Publisher: OKLAHOMA WATER RESOURCES BOARD- Water Quality Division		
	Year Published: 1983		
	Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria	Yes	No	No but justification why still usable
	RI	HHRA	Both
Conclusion - Data are usable for what purpose? (circle one):		Background	

Primary Reviewer & date: K. Ma 3/24/2016

Secondary Reviewer & date of concurrence: J. Ynfante 5/11/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Residential Remedial Investigation Report For Remedial Investigation/Feasibility Study Tar Creek Superfund Site		
		Agency/Author: Brown & Root Environmental		
		Publication ID: --		
		Publisher: --		
		Year Published: January 1997		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		X	(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		N/A	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		N/A	
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X	
	Are specific sampling locations identified?		X	
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X	
	Are all data qualifiers clearly defined?		X	
	Was the data collected under an approved QAPP?	X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Residential Remedial Investigation Report For Remedial Investigation/Feasibility Study Tar Creek Superfund Site		
	Agency/Author: Brown & Root Environmental		
	Publication ID: --		
	Publisher: --		
	Year Published: January 1997		
	Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria			
Overall Conclusions	This is only a partial document. Data older than 10 years.		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both

Primary Reviewer & date: W. Lynch 3/23/16**Secondary Reviewer & date of concurrence:** P. Lobos 7/13/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: Candidate Assessment Endpoints, Risk Questions, and Measurement Endpoints for a Baseline Ecological Risk Assessment			
		Agency/Author: MacDonald Environmental Sciences Ltd., USGS, CH2M Hill			
		Publication ID: MESL-TRI-ENDP-07-V1			
		Publisher: MacDonald Environmental Sciences Ltd., USGS, CH2M Hill			
		Year Published: 2007			
		Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).			X	
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?		X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			X	
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?			NA
Are specific sampling locations identified?			NA		
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			NA		
Are all data qualifiers clearly defined?			NA		
Was the data collected under an approved QAPP?			NA		
AF 4 - Uncertainty and Variability		The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			NA	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA	
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data						
	Title of document: Candidate Assessment Endpoints, Risk Questions, and Measurement Endpoints for a Baseline Ecological Risk Assessment						
	Agency/Author: MacDonald Environmental Sciences Ltd., USGS, CH2M Hill						
	Publication ID: MESL-TRI-ENDP-07-V1						
	Publisher: MacDonald Environmental Sciences Ltd., USGS, CH2M Hill						
	Year Published: 2007						
Data format (Excel, Access, Word, PDF, etc.): PDF							
Criteria							
Overall Conclusions							
Conclusion - Data are usable for what purpose? (circle one):							
					RI	HHRA	Both

Primary Reviewer & date: H. Mauer 3/31/16

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Summary Report of Washed and Unwashed Mine Tailings (Chat) from the Tar Creek Superfund Site Area		
		Agency/Author: Oklahoma Department of Environmental Quality		
		Publication ID: --		
		Publisher: --		
		Year Published: 2000		
		Data format (Excel, Access, Word, PDF, etc.) PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?	X		
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		X	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		X	
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?			X	
Are specific sampling locations identified?			X	
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			X	
Are all data qualifiers clearly defined?			X	
Was the data collected under an approved QAPP?				NA
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		X	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			Unsure
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Summary Report of Washed and Unwashed Mine Tailings (Chat) from the Tar Creek Superfund Site Area		
Agency/Author: Oklahoma Department of Environmental Quality			
Publication ID: --			
Publisher: --			
Year Published: 2000			
Data format (Excel, Access, Word, PDF, etc.) PDF			

Criteria	Yes	No	No but justification why still usable
Overall Conclusions	The document includes analytical data from chat and operational water in the Tar Creek Superfund area. >10 years old but can be useful for RI as background.		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both
	X		

Primary Reviewer & date: K. Ma 3/25/2016

Secondary Reviewer & date of concurrence: J. Ynfante 5/11/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of Document: Overview of the 2007 Sediment Sampling Program for the Tri-State Mining District		
		Agency/Author: D.D. MacDonald, D.E. Smorong, D.G. Pehrman, C.G. Ingersoll, J.J. Jackson, Y.K. Muirhead, S. Irving, and C. McCarthy		
		Publication ID: --		
		Publisher: --		
		Year Published: 2008		
		Data Format: PPT		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			Unknown
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X	
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			N/A
	Are all data qualifiers clearly defined?			N/A
	Was the data collected under an approved QAPP?			Unknown
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			N/A
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			N/A
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)
This document is an overview of a sampling field effort of stream sediment in the Tri-State Mining District; no data is provided. Expanded details				

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data																											
	Title of Document: Overview of the 2007 Sediment Sampling Program for the Tri-State Mining District																											
	Agency/Author: D.D. MacDonald, D.E. Smorong, D.G. Pehrman, C.G. Ingersoll, J.J. Jackson, Y.K. Muirhead, S. Irving, and C. McCarthy																											
	Publication ID: --																											
	Publisher: --																											
	Year Published: 2008																											
	Data Format: PPT																											
<table border="1"> <tr> <th rowspan="2">Criteria</th> <th colspan="3">No but justification</th> </tr> <tr> <th>Yes</th> <th>No</th> <th>why still usable</th> </tr> <tr> <td rowspan="2">Overall Conclusions</td> <td colspan="3">This document is an overview of a sampling field effort of stream sediment in the Tri-State Mining District; no data is provided. Expanded details and results are provided in the document titled "Tri-StateMiningDistrict-KS_DevelopmentToxicityThresholds-AssessingRisksSediment-DwellingOrganizsm-200810" (pdf of a powerpoint).</td> </tr> <tr> <td colspan="3"> <table border="1"> <tr> <td colspan="2">Conclusion - Data are usable for what purpose? (circle one):</td> <td>RI</td> <td>HHRA</td> <td>Both</td> </tr> <tr> <td colspan="2"></td> <td></td> <td></td> <td></td> </tr> </table> </td> </tr> </table>					Criteria	No but justification			Yes	No	why still usable	Overall Conclusions	This document is an overview of a sampling field effort of stream sediment in the Tri-State Mining District; no data is provided. Expanded details and results are provided in the document titled "Tri-StateMiningDistrict-KS_DevelopmentToxicityThresholds-AssessingRisksSediment-DwellingOrganizsm-200810" (pdf of a powerpoint).			<table border="1"> <tr> <td colspan="2">Conclusion - Data are usable for what purpose? (circle one):</td> <td>RI</td> <td>HHRA</td> <td>Both</td> </tr> <tr> <td colspan="2"></td> <td></td> <td></td> <td></td> </tr> </table>			Conclusion - Data are usable for what purpose? (circle one):		RI	HHRA	Both					
Criteria	No but justification																											
	Yes	No	why still usable																									
Overall Conclusions	This document is an overview of a sampling field effort of stream sediment in the Tri-State Mining District; no data is provided. Expanded details and results are provided in the document titled "Tri-StateMiningDistrict-KS_DevelopmentToxicityThresholds-AssessingRisksSediment-DwellingOrganizsm-200810" (pdf of a powerpoint).																											
	<table border="1"> <tr> <td colspan="2">Conclusion - Data are usable for what purpose? (circle one):</td> <td>RI</td> <td>HHRA</td> <td>Both</td> </tr> <tr> <td colspan="2"></td> <td></td> <td></td> <td></td> </tr> </table>			Conclusion - Data are usable for what purpose? (circle one):		RI	HHRA	Both																				
Conclusion - Data are usable for what purpose? (circle one):		RI	HHRA	Both																								

Primary Reviewer & date: S. Scott 3/27/16

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of Document: Development of Toxicity Thresholds for Assessing Risks to Sediment-Dwelling Organisms in the Tri-State Mining District - PowerPoint Presentation		
		Agency/Author: --		
		Publication ID: --		
		Publisher: --		
		Year Published: 2008		
		Data Format: PPT		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			Unknown
	(For HHRA only) If the data is surface water, is it accessible to receptors?			N/A
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			N/A
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			N/A
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			N/A
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?			X	
Are specific sampling locations identified?		X		
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			X	
Are all data qualifiers clearly defined?				N/A
Was the data collected under an approved QAPP?				Unknown
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			Unknown
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of Document: Development of Toxicity Thresholds for Assessing Risks to Sediment-Dwelling Organisms in the Tri-State Mining District - PowerPoint Presentation		
	Agency/Author: --		
	Publication ID: --		
	Publisher: --		
	Year Published: 2008		
	Data Format: PPT		
Criteria			
		Yes	No
		No but justification why still usable	
Overall Conclusions	Document includes data on sediment contamination levels in various fluvial sediments in Mining District, and the toxicity thresholds for selected biota in these environments. Data is from 2007 however, document appears to be a pdf of a powerpoint presentation, so limited description and detail is provided but could still be useful for RI or HHRA.		
	Conclusion - Data are usable for what purpose? (circle one):	RI	HHRA
			Both
			Background

Primary Reviewer & date: S. Scott 3/27/16

Secondary Reviewer & date of concurrence: J. Ynfante 5/11/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Tar Creek and Lower Spring River Watershed Management Plan - Reconnaissance Phase Draft		
		Agency/Author: USACE		
		Publication ID: --		
		Publisher: USACE		
		Year Published: 2004		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).			(If "No", no further use of data)
	Were the samples collected within the last 10 years?		x	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			
	(For HHRA only) If the data is surface water, is it accessible to receptors?		NA	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		NA	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		NA	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		NA	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		NA	
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X	
	Are specific sampling locations identified?		X	
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X	
	Are all data qualifiers clearly defined?		X	
	Was the data collected under an approved QAPP?		X	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		X	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		X	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		X	
	If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: Tar Creek and Lower Spring River Watershed Management Plan - Reconnaissance Phase Draft			
	Agency/Author: USACE			
	Publication ID: --			
	Publisher: USACE			
	Year Published: 2004			
	Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria				
Overall Conclusions	Similar to WP			
	Conclusion - Data are usable for what purpose? (circle one):			
	RI	HHRA	Both	
			background	

Primary Reviewer & date: H. Mauer 3/23/16

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Superfund and Mining Megsites—Lessons from the Coeur d'Alene River Basin		
		Agency/Author: Committee on Superfund Site Assessment and Remediation in the Coeur d'Alene River Basin; Board on Environmental Studies and Toxicology; Division on Earth and Life Studies		
		Publication ID: --		
		Publisher: National Research Council of National Academies		
		Year Published: 2005		
		Data format (Excel, Access, Word, PDF, etc.) PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?			NA
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).			(If "No", no further use of data)
	Were the samples collected within the last 10 years?			(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).			(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			NA
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?				NA
Are specific sampling locations identified?				NA
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?				NA
Are all data qualifiers clearly defined?				NA
Was the data collected under an approved QAPP?				NA
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			NA
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: Superfund and Mining Megsites—Lessons from the Coeur d'Alene River Basin				
	Agency/Author: Committee on Superfund Site Assessment and Remediation in the Coeur d'Alene River Basin; Board on Environmental Studies and Toxicology; Division on Earth and Life Studies				
	Publication ID: --				
	Publisher: National Research Council of National Academies				
	Year Published: 2005				
	Data format (Excel, Access, Word, PDF, etc.) PDF				
Criteria					
		Yes	No	No but justification why still usable	
Overall Conclusions	Incorrect document; only includes table of contents.				
	Conclusion - Data are usable for what purpose? (circle one):		RI	HHRA	Both

Primary Reviewer & date: K. Ma 3/24/2016

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: EPA Region 7 Fact Sheet: Mine Waste		
		Agency/Author: EPA		
		Publication ID: --		
		Publisher: EPA		
		Year Published: 2003		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		X	
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		NA	(If "No", no further use of data)
	Were the samples collected within the last 10 years?		NA	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		NA	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			NA
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?			NA
	Are specific sampling locations identified?			NA
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			NA
	Are all data qualifiers clearly defined?			NA
	Was the data collected under an approved QAPP?			NA
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			NA
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA
	If the data were not validated, is there sufficient data present to perform data validation?		NA	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: EPA Region 7 Fact Sheet: Mine Waste			
	Agency/Author: EPA			
	Publication ID: --			
	Publisher: EPA			
	Year Published: 2003			
	Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria				
		Yes	No	No but justification why still usable
Overall Conclusions				
	Conclusion - Data are usable for what purpose? (circle one):			
		RI	HHRA	Both
				X

Primary Reviewer & date: K. Ma 3/24/2016- Fact Sheet good for background information/history

Secondary Reviewer & date of concurrence: K. Rhoades 6/23/2016 - background/history only

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of Document: Comprehensive Study of the Grand Lake Watershed - Final Report		
		Agency/Author: Office of the Secretary of the Environment		
		Publication ID: --		
		Publisher: --		
		Year Published: December 31, 2005		
		Data Format: PDF		
Criteria	Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X- 2004 and earlier	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?	X		
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		X	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		X	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?	NA		
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		X	
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?	X		
	Are all data qualifiers clearly defined?	X		
	Was the data collected under an approved QAPP?	X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of Document: Comprehensive Study of the Grand Lake Watershed - Final Report		
		Agency/Author: Office of the Secretary of the Environment		
		Publication ID: --		
		Publisher: --		
		Year Published: December 31, 2005		
		Data Format: PDF		
Criteria		Yes	No	No but justification why still usable
Overall Conclusions				
		RI	HHRA	Both
		X		

Primary Reviewer & date: R. Eastin 3-21-16

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of Document: Framework for the Ecological Assessment of Impacted Sediments at Mining Sites in Region 7 - PowerPoint Presentation		
		Agency/Author: EPA; Jason Gunter and Venessa Madden		
		Publication ID: --		
		Publisher: EPA		
		Year Published: --		
		Data Format: Powerpoint		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?			N/A
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).			(If "No", no further use of data)
	Were the samples collected within the last 10 years?			(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).			(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			No data is presented in the document
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?			
	Are specific sampling locations identified?			
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			
	Are all data qualifiers clearly defined?			
	Was the data collected under an approved QAPP?			
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			N/A
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of Document: Framework for the Ecological Assessment of Impacted Sediments at Mining Sites in Region 7 - PowerPoint Presentation		
	Agency/Author: EPA; Jason Gunter and Venessa Madden		
	Publication ID: --		
	Publisher: EPA		
	Year Published: --		
	Data Format: Powerpoint		
Criteria			
Overall Conclusions	Not useful for either RI or HHRA, no data is presented nor is Tar Creek mentioned, only a general powerpoint on options for addressing mining impacted sediments in EPA Regions 6 and 7.		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both

Primary Reviewer & date: S. Scott 3/26/16

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Demonstration of Subaqueous Disposal of Mill Waste - PowerPoint presentation		
		Agency/Author: USEPA, NewFields, ATT, Sunoco and Jasper County Group		
		Publication ID: --		
		Publisher: --		
		Year Published: 2005		
		Data format (Excel, Access, Word, PDF, etc.): PowerPoint		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?		X	
	(For HHRA only) If the data is surface water, is it accessible to receptors?		NA	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		NA	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		NA	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		NA	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		X	
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X	
	Are specific sampling locations identified?		X	
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X	
	Are all data qualifiers clearly defined?		X	
	Was the data collected under an approved QAPP?		X	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			NA
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: Demonstration of Subaqueous Disposal of Mill Waste - PowerPoint presentation				
	Agency/Author: USEPA, NewFields, ATT, Sunoco and Jasper County Group				
	Publication ID: --				
	Publisher:				
	Year Published: 2005				
Data format (Excel, Access, Word, PDF, etc.): PowerPoint					
Criteria		Yes	No	No but justification why still usable	
Overall Conclusions	This reference document provides very little information. Data is not usable.				
			RI	HHRA	Both
	Conclusion - Data are usable for what purpose? (circle one):				

Primary Reviewer & date: L. Hill 3/23/16**Secondary Reviewer & date of concurrence: P.Lobos 7/13/16**

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of Document: Development and application of empirically-derived sediment quality guidelines		
		Agency/Author: USGS; Chris Ingersoll and Don MacDonald		
		Publication ID: --		
		Publisher: U.S. Department of the interior; U.S. Geological Survey		
		Year Published: 2005		
		Data Format: powerpoint		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?		X	No data presented
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?			X	
Are specific sampling locations identified?			X	
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			X	
Are all data qualifiers clearly defined?			X	
Was the data collected under an approved QAPP?			X	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		X	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		X	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		X	
	If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of Document: Development and application of empirically-derived sediment quality guidelines		
	Agency/Author: USGS; Chris Ingersoll and Don MacDonald		
	Publication ID: --		
	Publisher: U.S. Department of the interior; U.S. Geological Survey		
	Year Published: 2005		
	Data Format: powerpoint		
Criteria			
Overall Conclusions	No data for Tar Creek presented in this document, provides SQG and chemistry related discussion (general). Data collected outside of the six exposure areas and data older than 10 years.		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both

Primary Reviewer & date: S. Scott 3/26/16**Secondary Reviewer & date of concurrence: P. Lobos 7/13/16**

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: FINAL ENVIRONMENTAL ASSESSMENT- TAR CREEK DEMONSTRATION PLAN FOR LAND RECLAMATION AT THE EAST KENOYER SITE, PICHER, OKLAHOMA		
		Agency/Author: U.S. Army Corps of Engineers Southwestern Division Tulsa District		
		Publication ID: --		
		Publisher: U.S. Army Corps of Engineers Southwestern Division Tulsa District		
		Year Published: 2005		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		NA	
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		NA	(If "No", no further use of data)
	Were the samples collected within the last 10 years?		NA	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		NA	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			NA
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?				NA
Are specific sampling locations identified?				NA
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?				NA
Are all data qualifiers clearly defined?				NA
Was the data collected under an approved QAPP?				NA
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			NA
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: FINAL ENVIRONMENTAL ASSESSMENT- TAR CREEK DEMONSTRATION PLAN FOR LAND RECLAMATION AT THE EAST KENOYER SITE, PICHER, OKLAHOMA		
	Agency/Author: U.S. Army Corps of Engineers Southwestern Division Tulsa District		
	Publication ID: --		
	Publisher: U.S. Army Corps of Engineers Southwestern Division Tulsa District		
	Year Published: 2005		
	Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria	Yes	No	No but justification why still usable
Overall Conclusions			
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both
	X	X	Background

Primary Reviewer & date: K. Ma 4/1/2016

Secondary Reviewer & date of concurrence: J. Ynfante 5/11/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: Summary Report and Water Quality Analyses for the McNeely-Green Monitoring Well			
		Agency/Author: ODEQ			
		Publication ID: --			
		Publisher: ODEQ			
		Year Published: 2005			
		Data format (Excel, Access, Word, PDF, etc.):PDF			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)	
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X			
	(For HHRA only) If the data is surface water, is it accessible to receptors?		X		
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		X		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		X		
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		X		
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		X		
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X	
Are specific sampling locations identified?		X			
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X			
Are all data qualifiers clearly defined?		X			
Was the data collected under an approved QAPP?			X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?	X			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		X		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X			
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Summary Report and Water Quality Analyses for the McNeely-Green Monitoring Well		
	Agency/Author: ODEQ		
	Publication ID: --		
	Publisher: ODEQ		
	Year Published: 2005		
	Data format (Excel, Access, Word, PDF, etc.):PDF		
Criteria			
		Yes	No
		No but justification why still usable	
Overall Conclusions			
	Conclusion - Data are usable for what purpose? (circle one):	RI	HHRA
		X	

Primary Reviewer & date: H.Mauer 3/24/16

Secondary Reviewer & date of concurrence: K. Rhoades 6/9/2016

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: PICHER MINING FIELD, NORTHEAST OKLAHOMA SUBSIDENCE EVALUATION REPORT		
		Agency/Author: Subsidence Evaluation Team for U.S. Army Corps of Engineers Tulsa District		
		Publication ID: --		
		Publisher: --		
		Year Published: 2006		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		NA	(If "No", no further use of data)
	Were the samples collected within the last 10 years?		NA	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?			NA
	Are specific sampling locations identified?			NA
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			NA
	Are all data qualifiers clearly defined?			NA
	Was the data collected under an approved QAPP?			NA
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		NA	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA
	If the data were not validated, is there sufficient data present to perform data validation?		NA	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: PICHER MINING FIELD, NORTHEAST OKLAHOMA SUBSIDENCE EVALUATION REPORT				
	Agency/Author: Subsidence Evaluation Team for U.S. Army Corps of Engineers Tulsa District				
	Publication ID: --				
	Publisher: --				
	Year Published: 2006				
	Data format (Excel, Access, Word, PDF, etc.): PDF				
Criteria			Yes	No	No but justification why still usable
Overall Conclusions					
	Conclusion - Data are usable for what purpose? (circle one):				
	RI	HHRA	Both		
			X		

Primary Reviewer & date: K. Ma 3/25/2016- can be used background and understanding topography

Secondary Reviewer & date of concurrence: K. Rhoades 6/23/2016 - background/regional information

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of Document: TCOU4_Plant-AssociatedSoilData-200511		
		Agency/Author: CH2M Hill		
		Publication ID: --		
		Publisher: CH2M Hill		
		Year Published: 2005		
		Data Format: Excel		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		Aquatic plants collected from chat impacted soils
	Were the samples collected within the last 10 years?		X	2005
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		Various chat impacted sites, including Elm Creek and retention pond wetlands
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?		X	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X		Soil with plant collection was tested
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		X	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		X	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X		Aquatic plants
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?	X		
	Are all data qualifiers clearly defined?	X		
	Was the data collected under an approved QAPP?	X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of Document: TCOU4_Plant-AssociatedSoilData-200511			
	Agency/Author: CH2M Hill			
	Publication ID: --			
	Publisher: CH2M Hill			
	Year Published: 2005			
	Data Format: Excel			
Criteria				
		Yes	No	No but justification why still usable
Overall Conclusions	Data was collected more than 10 years ago, but metals impact on vegetation is expected to be similar. No text with this document, only data results collected from various aquatic plants that were tested. This appears to be the soil data to go along with the TCOU4_BiotaData-Summary_200510 database. Analytical data obtained from CLP and validation per national functional guidelines.			
	Conclusion - Data are usable for what purpose? (circle one):			
	RI	HHRA	Both	
	X			

Primary Reviewer & date: R. Eastin 4-1-16

Secondary Reviewer & date of concurrence: J. Ynfante 5/11/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Assessment of Trace Elements in Sediment in the Spring River/Empire Lake and Tar Creek Systems, Cherokee County, Kansas		
		Agency/Author: L.M. Pope, K.E. Juracek, and A.C. Ziegler/U.S. Geological Survey		
		Publication ID: --		
		Publisher: U.S. Geological Survey		
		Year Published: 2005		
		Data format (Excel, Access, Word, PDF, etc.): PowerPoint		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		X	
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?		X	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		X	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		X	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?	X		
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		X	
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X	
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X	
	Are all data qualifiers clearly defined?		X	
	Was the data collected under an approved QAPP?		X	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		X	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		X	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		X	
	If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: Assessment of Trace Elements in Sediment in the Spring River/Empire Lake and Tar Creek Systems, Cherokee County, Kansas			
	Agency/Author: L.M. Pope, K.E. Juracek, and A.C. Ziegler/U.S. Geological Survey			
	Publication ID: --			
	Publisher: U.S. Geological Survey			
	Year Published: 2005			
	Data format (Excel, Access, Word, PDF, etc.): PowerPoint			
Criteria		Yes	No	No but justification why still usable
Overall Conclusions	No analytical data presented in tables. Therefore, reference document not very useful. Potentially useful background information.			
	Conclusion - Data are usable for what purpose? (circle one):		RI	HHRA
				Background only

Primary Reviewer & date: L. Hill 3/23/16

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Quantifying Decreases in Stormwater Runoff from Deep Tilling, Chisel Plowing, and Compost-Amendment		
		Agency/Author: Jeremy D. Balousek		
		Publication ID: --		
		Publisher: Dane County Land Conservation Department		
		Year Published: 2003		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		X	
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		X	(If "No", no further use of data)
	Were the samples collected within the last 10 years?			(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?			
	Are specific sampling locations identified?			
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			
	Are all data qualifiers clearly defined?			
	Was the data collected under an approved QAPP?			
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: Quantifying Decreases in Stormwater Runoff from Deep Tilling, Chisel Plowing, and Compost-Amendment			
	Agency/Author: Jeremy D. Balousek			
	Publication ID: --			
	Publisher: Dane County Land Conservation Department			
	Year Published: 2003			
	Data format (Excel, Access, Word, PDF, etc.) PDF			
Criteria				
		Yes	No	No but justification why still usable
Overall Conclusions	This reference document does not present any usable analytical data. Document is not related to Tar Creek Superfund Site.			
	Conclusion - Data are usable for what purpose? (circle one):			
	RI	HHRA	Both	

Primary Reviewer & date: L. Hill 3/29/16

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Metals in Surface Water and Sediment in the Neosho and Spring River Basins, 2000 and 2002 - PowerPoint Presentation		
		Agency/Author: U.S. Geological Survey/Quapaw and Seneca-Cayuga Tribes of Oklahoma		
		Publication ID: --		
		Publisher: U.S. Geological Survey		
		Year Published: 2003		
		Data format (Excel, Access, Word, PDF, etc.): PowerPoint		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		X	(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?		X	
	(For HHRA only) If the data is surface water, is it accessible to receptors?		X	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		X	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		X	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		X	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		X	
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X	
	Are specific sampling locations identified?		X	
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X	
	Are all data qualifiers clearly defined?		X	
	Was the data collected under an approved QAPP?		X	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		X	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		X	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		X	
	If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Metals in Surface Water and Sediment in the Neosho and Spring River Basins, 2000 and 2002 - PowerPoint Presentation		
	Agency/Author: U.S. Geological Survey/Quapaw and Seneca-Cayuga Tribes of Oklahoma		
	Publication ID: --		
	Publisher: U.S. Geological Survey		
	Year Published: 2003		
	Data format (Excel, Access, Word, PDF, etc.): PowerPoint		
Criteria			
Overall Conclusions	No analytical data presented in tables. Therefore, reference document not very useful. Potentially useful background information.		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both

Primary Reviewer & date: L. Hill 3/23/16

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: Preliminary Ground-Water Flow Model of the Boone Formation At The Tar Creek Superfund Site, Oklahoma and Kansas, With Simulations of Selected Potential Remediation Scenarios-DRAFT			
		Agency/Author: U.S. EPA			
		Publication ID: Draft version			
		Publisher: U.S. DOI and USGS			
		Year Published: 2005			
		Data format (Excel, Access, Word, PDF, etc.): Word			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?			X	
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?			X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?		X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			X	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			X	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			X	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			X	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			X	
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
Are sample matrix, date of sample collection, analytical method, and units stated for all results?			X		
Are specific sampling locations identified?			X		
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			X		
Are all data qualifiers clearly defined?			X		
Was the data collected under an approved QAPP?			X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?			NA	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			X	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			X	
	If the data were not validated, is there sufficient data present to perform data validation?			X	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: Preliminary Ground-Water Flow Model of the Boone Formation At The Tar Creek Superfund Site, Oklahoma and Kansas, With Simulations of Selected Potential Remediation Scenarios- DRAFT			
	Agency/Author: U.S. EPA			
	Publication ID: Draft version			
	Publisher: U.S. DOI and USGS			
	Year Published: 2005			
	Data format (Excel, Access, Word, PDF, etc.): Word			
Criteria				
		Yes	No	No but justification why still usable
Overall Conclusions				
	Conclusion - Data are usable for what purpose? (circle one):			
		RI	HHRA	Both
		X		

Primary Reviewer & date: H.Mauer 3/22/16

background only

Secondary Reviewer & date of concurrence: K. Rhoades 6/23/2016

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of Document: TCOU4_BiotaData-Summary_200510		
		Agency/Author: CH2M Hill		
		Publication ID: --		
		Publisher: CH2M Hill		
		Year Published: 2005		
		Data Format: Excel		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		Aquatic plants collected from chat impacted soils
	Were the samples collected within the last 10 years?		X	2005
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		Various chat impacted sites, including Elm Creek and retention pond wetlands
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?		X	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		X	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		X	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		X	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X		Aquatic plants
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?	X		
	Are all data qualifiers clearly defined?	X		
	Was the data collected under an approved QAPP?	X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of Document: TCOU4_BiotaData-Summary_200510			
	Agency/Author: CH2M Hill			
	Publication ID: --			
	Publisher: CH2M Hill			
	Year Published: 2005			
	Data Format: Excel			
Criteria				
		Yes	No	No but justification why still usable
Overall Conclusions	Data was collected more than 10 years ago, but metals impact on vegetation should still be the same. No text with this document, only data results collected from various aquatic plants that were tested. Analytical data was obtained from CLP and/or validated per national functional guidelines based on data qualification.			
	Conclusion - Data are usable for what purpose? (circle one):			
	RI	HHRA	Both	
	X			

Primary Reviewer & date: R. Eastin 4-1-16

Secondary Reviewer & date of concurrence: J. Ynfante 5/11/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of Document: Sampling and Metal Analysis of Chat Piles in The Tar Creek Superfund Site		
		Agency/Author: Oklahoma Department of Environmental Quality, Dennis L. Datin, David A. Cates		
		Publication ID: --		
		Publisher: ODEQ		
		Year Published: 2002		
		Data Format: PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		X	(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?		X	
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			N/A
	Are all data qualifiers clearly defined?			N/A
	Was the data collected under an approved QAPP?	X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of Document: Sampling and Metal Analysis of Chat Piles in The Tar Creek Superfund Site		
	Agency/Author: Oklahoma Department of Environmental Quality, Dennis L. Datin, David A. Cates		
	Publication ID: --		
	Publisher: ODEQ		
	Year Published: 2002		
Data Format: PDF			
Criteria			No but justification why still usable
Overall Conclusions	Data is useful for background information on chat characterization, but not sediment as the sampling media. Also, data is over 10 years old.		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both
			X

Primary Reviewer & date: S. Scott 3/27/16

Background

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: DRAFT FINAL Human Health Risk Assessment Tar Creek Superfund Site Operable Unit No. 4 Ottawa County, Oklahoma		
		Agency/Author: CH2M		
		Publication ID: --		
		Publisher: --		
		Year Published: Feb. 2006		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl].)	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			N/A
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X		Edible Plants - roots, leaves Fish - Tissue
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?	X		
	Are all data qualifiers clearly defined?	X		
	Was the data collected under an approved QAPP?	X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?	N/A		(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data					
	Title of document: DRAFT FINAL Human Health Risk Assessment Tar Creek Superfund Site Operable Unit No. 4 Ottawa County, Oklahoma					
	Agency/Author: CH2M					
	Publication ID: --					
	Publisher: --					
	Year Published: Feb. 2006					
Data format (Excel, Access, Word, PDF, etc.): PDF						
Criteria				Yes	No	No but justification why still usable
Overall Conclusions	Data over 10 years old and specific to OU4.					
	Conclusion - Data are usable for what purpose? (circle one):					
	RI	HHRA	Both			
	X					

Primary Reviewer & date: W. Lynch 3/23/16

Secondary Reviewer & date of concurrence: P. Lobos 7/13/16

Background only

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Tar Creek Mill Residue Database		
		Agency/Author: AATA International, Inc.		
		Publication ID: --		
		Publisher: STORET		
		Year Published: 2016		
		Data format (Excel, Access, Word, PDF, etc.): Access		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?		X	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		X	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		X	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		X	
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?	X		
	Are all data qualifiers clearly defined?	X		
	Was the data collected under an approved QAPP?	X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		X	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		X	
	If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: Tar Creek Mill Residue Database			
	Agency/Author: AATA International, Inc.			
	Publication ID: --			
	Publisher: STORET			
	Year Published: 2016			
	Data format (Excel, Access, Word, PDF, etc.): Access			
Criteria		Yes	No	No but justification why still usable
Overall Conclusions	This database includes a significant amount of data from the Tar Creek area collected as recently as 2002. However, the significant number of unknowns regarding the data, including the inability to confirm data validation, as well as the fact that the data is 14+ years old leads me to believe that this data could only be used as background information at most.			
	Conclusion - Data are usable for what purpose? (circle one):		RI	HHRA

Primary Reviewer & date: W. Kite 3/25/2016

Secondary Reviewer & date of concurrence: J. Ynfante 6/3/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: TMD May 2006 Investigation		
		Agency/Author: Black & Veatch		
		Publication ID: --		
		Publisher: STORET		
		Year Published: 2016		
		Data format (Excel, Access, Word, PDF, etc.): Access		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl].	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?		X	
	(For HHRA only) If the data is surface water, is it accessible to receptors?		X	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		X	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		X	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		X	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		X	
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X	All non-detects reported with value and U qualifier; but no detection limit.
	Are all data qualifiers clearly defined?	X		
	Was the data collected under an approved QAPP?			NA
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		X	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: TMD May 2006 Investigation		
	Agency/Author: Black & Veatch		
	Publication ID: --		
	Publisher: STORET		
	Year Published: 2016		
	Data format (Excel, Access, Word, PDF, etc.): Access		
Criteria			
		Yes	No
		No but justification why still usable	
Overall Conclusions	This database contains lots of data from the exposure areas, and includes GPS coordinates for samples, however the data is nearly 10 years old, and I did not find clear evidence of validation. Unless validation can be performed on the data, this data is likely only useful for background information.		
	Conclusion - Data are usable for what purpose? (circle one):	RI	HHRA
		X	

Primary Reviewer & date: W. Kite 3/25/2016

Secondary Reviewer & date of concurrence: J. Ynfante 6/3/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Guidance Document for the Development of Site-Specific Water Quality Criteria for Metals		
		Agency/Author: OWRB		
		Publication ID: OWRB TECHNICAL REPORT TRWQ2002-1		
		Publisher: OWRB		
		Year Published: 2003		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).			(If "No", no further use of data)
	Were the samples collected within the last 10 years?			(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?			
	Are specific sampling locations identified?			
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			
	Are all data qualifiers clearly defined?			
	Was the data collected under an approved QAPP?			
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Guidance Document for the Development of Site-Specific Water Quality Criteria for Metals		
	Agency/Author: OWRB		
	Publication ID: OWRB TECHNICAL REPORT TRWQ2002-1		
	Publisher: OWRB		
	Year Published: 2003		
	Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria			
		Yes	No
		No but justification why still usable	
Overall Conclusions			
	Conclusion - Data are usable for what purpose? (circle one):		
		RI	HHRA
		Both	

Primary Reviewer & date: H. Mauer 3/23/16

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: A Guidance Manual to Support the Assessment of Contaminated Sediments in Freshwater Ecosystems: Volume I - An Ecosystem-Based Framework for Assessing and Managing Contaminated Sediments		
		Agency/Author: Donald D. MacDonald/MacDonald Environmental Sciences Ltd.; Christopher H. Ingersoll/U.S. Geological Survey		
		Publication ID: EPA-905-B02-001-A		
		Publisher: U.S. Environmental Protection Agency		
		Year Published: 12/2002		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).			(If "No", no further use of data)
	Were the samples collected within the last 10 years?			(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?			
	Are specific sampling locations identified?			
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			
	Are all data qualifiers clearly defined?			
	Was the data collected under an approved QAPP?			
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: A Guidance Manual to Support the Assessment of Contaminated Sediments in Freshwater Ecosystems: Volume I - An Ecosystem-Based Framework for Assessing and Managing Contaminated Sediments		
	Agency/Author: Donald D. MacDonald/MacDonald Environmental Sciences Ltd.; Christopher H. Ingersoll/U.S. Geological Survey		
	Publication ID: EPA-905-B02-001-A		
	Publisher: U.S. Environmental Protection Agency		
	Year Published: 12/2002		
	Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria	Yes	No	No but justification why still usable
Overall Conclusions	This reference document contains no data related to the six exposure focus areas. This document (Volume I) is a guidance manual intended to support the design and implementation of assessments of sediment quality conditions by: This manual might be useful in decision making for Tar Creek Superfund Site, however, more recent guidance manual may be available that serves as a more up-to-date manual for such sites.		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both

Primary Reviewer & date: L. Hill 3/24/16

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: A Guidance Manual to Support the Assessment of Contaminated Sediments in Freshwater Ecosystems: Volume II - Design and Implementation of Sediment Quality Investigations		
		Agency/Author: Donald D. MacDonald/MacDonald Environmental Sciences Ltd.; Christopher H. Ingersoll/U.S. Geological Survey		
		Publication ID: EPA-905-B02-001-B		
		Publisher: U.S. Environmental Protection Agency		
		Year Published: 12/2002		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).			(If "No", no further use of data)
	Were the samples collected within the last 10 years?			(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
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AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: A Guidance Manual to Support the Assessment of Contaminated Sediments in Freshwater Ecosystems: Volume II - Design and Implementation of Sediment Quality Investigations			
	Agency/Author: Donald D. MacDonald/MacDonald Environmental Sciences Ltd.; Christopher H. Ingersoll/U.S. Geological Survey			
	Publication ID: EPA-905-B02-001-B			
	Publisher: U.S. Environmental Protection Agency			
	Year Published: 12/2002			
	Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria		Yes	No	No but justification why still usable
Overall Conclusions	This reference document contains no data related to the six exposure focus areas. This document (Volume II) is a guidance manual intended to support the design and implementation of assessments of sediment quality conditions by: This manual might be useful in decision making for Tar Creek Superfund Site, however, more recent guidance manual may be available that serves as a more up-to-date manual for such sites.			
	Conclusion - Data are usable for what purpose? (circle one):			
	RI	HHRA	Both	

Primary Reviewer & date: L. Hill 3/24/16

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: A Guidance Manual to Support the Assessment of Contaminated Sediments in Freshwater Ecosystems: Volume III - Interpretation of the Results of Sediment Quality Investigations		
		Agency/Author: Donald D. MacDonald/MacDonald Environmental Sciences Ltd.; Christopher H. Ingersoll/U.S. Geological Survey		
		Publication ID: EPA-905-B02-001-C		
		Publisher: U.S. Environmental Protection Agency		
		Year Published: 12/2002		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).			(If "No", no further use of data)
	Were the samples collected within the last 10 years?			(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
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	Are specific sampling locations identified?			
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			
	Are all data qualifiers clearly defined?			
	Was the data collected under an approved QAPP?			
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: A Guidance Manual to Support the Assessment of Contaminated Sediments in Freshwater Ecosystems: Volume III - Interpretation of the Results of Sediment Quality Investigations		
	Agency/Author: Donald D. MacDonald/MacDonald Environmental Sciences Ltd.; Christopher H. Ingersoll/U.S. Geological Survey		
	Publication ID: EPA-905-B02-001-C		
	Publisher: U.S. Environmental Protection Agency		
	Year Published: 12/2002		
	Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria	Yes	No	No but justification why still usable
Overall Conclusions	This reference document contains no data related to the six exposure focus areas. This document (Volume II) is a guidance manual intended to support the design and implementation of assessments of sediment quality conditions by: This manual might be useful in decision making for Tar Creek Superfund Site, however, more recent guidance manual may be available that serves as a more up-to-date manual for such sites.		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both

Primary Reviewer & date: L. Hill 3/24/16

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

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N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Evaluation of the Matching Sediment Chemistry and Sediment Toxicity in the Tri-State Mining District (TSMD), Missouri, Oklahoma, and Kansas		
		Agency/Author: MacDonald Environmental Sciences Ltd./U.S. Geological Survey/ CH2M Hill; Donald D. MacDonald, Dawn E. Smorong, Christopher G. Ingersoll, John M. Besser, William G. Brumbaugh, Nile Kemble, Thomas W. May, Scott Irving, and Margaret O'Hare		
		Publication ID: --		
		Publisher: MacDonald Environmental Sciences Ltd.		
		Year Published: 08/2008		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		X	
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		X	(If "No", no further use of data)
	Were the samples collected within the last 10 years?			(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).			(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?			
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	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			
	Are all data qualifiers clearly defined?			
	Was the data collected under an approved QAPP?			
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
	Title of document: Evaluation of the Matching Sediment Chemistry and Sediment Toxicity in the Tri-State Mining District (TSMD), Missouri, Oklahoma, and Kansas			
	Agency/Author: MacDonald Environmental Sciences Ltd./U.S. Geological Survey/ CH2M Hill; Donald D. MacDonald, Dawn E. Smorong, Christopher G. Ingersoll, John M. Besser, William G. Brumbaugh, Nile Kemble, Thomas W. May, Scott Irving, and Margaret O'Hare			
	Publication ID: --			
	Publisher: MacDonald Environmental Sciences Ltd.			
	Year Published: 08/2008			
	Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria		Yes	No	No but justification why still usable
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)
Overall Conclusions	No usable data.			
	Conclusion - Data are usable for what purpose? (circle one):		RI	HHRA

Primary Reviewer & date: L. Hill 3/30/16

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: 2013 Kansas Environment Report		
		Agency/Author: Kansas Department of Health and Environment		
		Publication ID: --		
		Publisher: Kansas Department of Health and Environment		
		Year Published: 2013		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).			(If "No", no further use of data)
	Were the samples collected within the last 10 years?			(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).			(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?				
Are specific sampling locations identified?				
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?				
Are all data qualifiers clearly defined?				
Was the data collected under an approved QAPP?				
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: 2013 Kansas Environment Report		
	Agency/Author: Kansas Department of Health and Environment		
	Publication ID: ---		
	Publisher: Kansas Department of Health and Environment		
	Year Published: 2013		
Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria			
Overall Conclusions	This reference document does not provide any usable data or information related to the Tar Creek Superfund Site.		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both

Primary Reviewer & date: L. Hill**Secondary Reviewer & date of concurrence:** J. Ynfante

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: TCOU5 WPA1 Property Database		
		Agency/Author: CH2M Hill		
		Publication ID: --		
		Publisher: --		
		Year Published: 2007		
		Data format (Excel, Access, Word, PDF, etc.): Access		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		X	
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		X	(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?		X	
	(For HHRA only) If the data is surface water, is it accessible to receptors?		X	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		X	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		X	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		X	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		X	
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X	
	Are specific sampling locations identified?		X	
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X	
	Are all data qualifiers clearly defined?		X	
	Was the data collected under an approved QAPP?		X	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		X	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		X	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		X	
	If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: TCOU5 WPA1 Property Database				
	Agency/Author: CH2M Hill				
	Publication ID: --				
	Publisher: --				
	Year Published: 2007				
Data format (Excel, Access, Word, PDF, etc.): Access					
Criteria		Yes	No	No but justification why still usable	
Overall Conclusions	This is a project property database and contains no site data. It is not a useful document.				
			RI	HHRA	Both
	Conclusion - Data are usable for what purpose? (circle one):				

Primary Reviewer & date: W. Kite 3/30/2016**Secondary Reviewer & date of concurrence:** J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Aquatic Health and Exposure Pathways of Trace Elements		
		Agency/Author: U.S. Department of the Interior/U.S. Geological Survey		
		Publication ID: Professional Paper 1652-D10		
		Publisher: Farag, Nimick, Kimball, Church, Skaar, Brumbaugh, Hogstrand, and MacConnell		
		Year Published: 03/2005		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		X	
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?		X	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		X	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		X	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		X	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X		biofilm and tissues from invertebrates and fish
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		However, analytical methods are not stated.
	Are specific sampling locations identified?	X		On figure, but no coordinates.
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?	X		USEPA detection limits
	Are all data qualifiers clearly defined?		X	No data qualifiers observed in tables.
	Was the data collected under an approved QAPP?		X	Not mentioned in text.
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		X	No mention of data validation.
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		X	
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Aquatic Health and Exposure Pathways of Trace Elements		
	Agency/Author: U.S. Department of the Interior/U.S. Geological Survey		
	Publication ID: Professional Paper 1652-D10		
	Publisher: Farag, Nimick, Kimball, Church, Skaar, Brumbaugh, Hogstrand, and MacConnell		
	Year Published: 03/2005		
	Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria	Yes	No	No but justification why still usable
Overall Conclusions	Data are not usable because data were collected 20 years ago, no QAPP, no data validation, and data was not collected from within the six exposure focus areas.		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both

Primary Reviewer & date: L. Hill 3/23/2016

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: Division of Environment Quality Management Plan: Part III - Fish Tissue Contaminant Monitoring Program Quality Assurance Management Plan, Revision 2			
		Agency/Author: Division of Environment Quality Management Plan			
		Publication ID: --			
		Publisher: Kansas Department of Health and Environment			
		Year Published: 2013			
		Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)	
	Were the samples collected within the last 10 years?		NA	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		NA	(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			NA	
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA	
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?			NA
Are specific sampling locations identified?				NA	
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?				NA	
Are all data qualifiers clearly defined?				NA	
Was the data collected under an approved QAPP?				NA	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?			NA	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA	
	If the data were not validated, is there sufficient data present to perform data validation?		NA	(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Division of Environment Quality Management Plan: Part III - Fish Tissue Contaminant Monitoring Program Quality Assurance Management Plan, Revision 2		
	Agency/Author: Division of Environment Quality Management Plan		
	Publication ID: --		
	Publisher: Kansas Department of Health and Environment		
	Year Published: 2013		
	Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria			
	Yes	No	No but justification why still usable
Overall Conclusions	Sampling plan, no data collected.		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both

Primary Reviewer & date: K. Ma 4/4/2016

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: PUBLIC HEALTH ASSESSMENT FOR OCCURRENCE OF SELECTED HEALTH CONDITIONS IN OTTAWA COUNTY, OKLAHOMA. Report & Fact Sheet			
		Agency/Author: Oklahoma State Department of Health, The Agency for Toxic Substances and Disease Registry U.S. Department of Health and Human Services			
		Publication ID: --			
		Publisher: --			
		Year Published: September 2008			
		Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		N/A		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		N/A	(If "No", no further use of data)	
	Were the samples collected within the last 10 years?		N/A	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?		N/A		
	(For HHRA only) If the data is surface water, is it accessible to receptors?		N/A		
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		N/A		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		N/A		
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		N/A		
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		N/A		
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?		N/A	
Are specific sampling locations identified?			N/A		
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			N/A		
Are all data qualifiers clearly defined?			N/A		
Was the data collected under an approved QAPP?					
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?		N/A		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		N/A		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		N/A		
	If the data were not validated, is there sufficient data present to perform data validation?		N/A	(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: PUBLIC HEALTH ASSESSMENT FOR OCCURRENCE OF SELECTED HEALTH CONDITIONS IN OTTAWA COUNTY, OKLAHOMA. Report & Fact Sheet			
	Agency/Author: Oklahoma State Department of Health, The Agency for Toxic Substances and Disease Registry U.S. Department of Health and Human Services			
	Publication ID: --			
	Publisher: --			
	Year Published: September 2008			
	Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria		Yes	No	No but justification why still usable
Overall Conclusions	This document provides information and research on health conditions potentially associated with Tar Creek. ATSDR Health condition report. No quantitative data for HHRA assessment.			
	Conclusion - Data are usable for what purpose? (circle one):			
	RI	HHRA	Both	

Primary Reviewer & date: W. Lynch 3/24/16

Secondary Reviewer & date of concurrence: P. Lobos 7/13/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: Report to Congress Tar Creek Superfund Site Ottawa County, Oklahoma			
		Agency/Author: Julie Louise Gerberding, M.D., M.P.H. Director, Centers for Disease Control and Prevention Administrator, Agency for Toxic Substances and Disease Registry			
		Publication ID: --			
		Publisher: --			
		Year Published: October 2004			
		Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?			X	
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).			X	(If "No", no further use of data)
	Were the samples collected within the last 10 years?			X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			N/A	
	(For HHRA only) If the data is surface water, is it accessible to receptors?			N/A	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			N/A	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			N/A	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			N/A	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			N/A	
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.				
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?			N/A	
	Are specific sampling locations identified?			N/A	
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			N/A	
	Are all data qualifiers clearly defined?			N/A	
	Was the data collected under an approved QAPP?			N/A	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?				
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?				
	Is the data considered valid for use (i.e., the data were not rejected during validation)?				
	If the data were not validated, is there sufficient data present to perform data validation?				(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: Report to Congress Tar Creek Superfund Site Ottawa County, Oklahoma				
	Agency/Author: Julie Louise Gerberding, M.D., M.P.H. Director, Centers for Disease Control and Prevention Administrator, Agency for Toxic Substances and Disease Registry				
	Publication ID: --				
	Publisher: --				
	Year Published: October 2004				
Data format (Excel, Access, Word, PDF, etc.): PDF					
Criteria					
Overall Conclusions	This document discusses sources and exposure pathways in relation to blood lead levels in children. Data older than 10 years.				
	Conclusion - Data are usable for what purpose? (circle one):				
	RI	HHRA	Both		

Primary Reviewer & date: W. Lynch 3/23/16

Secondary Reviewer & date of concurrence: P. Lobos 7/13/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: TOXICOLOGICAL PROFILE FOR CADMIUM		
		Agency/Author: ATSDR		
		Publication ID: --		
		Publisher: U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES		
		Year Published: 2012		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		NA	(If "No", no further use of data)
	Were the samples collected within the last 10 years?		NA	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		NA	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			NA
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?			NA
	Are specific sampling locations identified?			NA
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			NA
	Are all data qualifiers clearly defined?			NA
	Was the data collected under an approved QAPP?			NA
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			NA
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: TOXICOLOGICAL PROFILE FOR CADMIUM			
	Agency/Author: ATSDR			
	Publication ID: --			
	Publisher: U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES			
	Year Published: 2012			
Data format (Excel, Access, Word, PDF, etc.): PDF				
Criteria		Yes	No	No but justification why still usable
Overall Conclusions	Toxicological Profile			
	Conclusion - Data are usable for what purpose? (circle one):			
		RI	HHRA	Both
			X	

Primary Reviewer & date: Kaitlin Ma 3/29/2016- very detailed/specific- can be useful for HHRA**Secondary Reviewer & date of concurrence:** P. Lobos 7/13/16**Background Only**

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: TOXICOLOGY PROFILE FOR CHROMIUM		
		Agency/Author: ATSDR		
		Publication ID: --		
		Publisher: U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES		
		Year Published: 2012		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		NA	(If "No", no further use of data)
	Were the samples collected within the last 10 years?		NA	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		NA	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			NA
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?			NA
	Are specific sampling locations identified?			NA
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			NA
	Are all data qualifiers clearly defined?			NA
	Was the data collected under an approved QAPP?			NA
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			NA
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA
	If the data were not validated, is there sufficient data present to perform data validation?		NA	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: TOXICOLOGY PROFILE FOR CHROMIUM			
	Agency/Author: ATSDR			
	Publication ID: --			
	Publisher: U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES			
	Year Published: 2012			
Data format (Excel, Access, Word, PDF, etc.): PDF				
Criteria				
		Yes	No	No but justification why still usable
Overall Conclusions				
	Conclusion - Data are usable for what purpose? (circle one):			
	RI	HHRA	Both	

Primary Reviewer & date: K. Ma 3/29/2016

Secondary Reviewer & date of concurrence: P. Lobos 7/8/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: TOXICOLOGICAL PROFILE FOR LEAD		
		Agency/Author: ATSDR		
		Publication ID: --		
		Publisher: U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES		
		Year Published: 2007		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		NA	(If "No", no further use of data)
	Were the samples collected within the last 10 years?		NA	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		NA	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			NA
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?			NA
	Are specific sampling locations identified?			NA
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			NA
	Are all data qualifiers clearly defined?			NA
	Was the data collected under an approved QAPP?			NA
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			NA
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: TOXICOLOGICAL PROFILE FOR LEAD				
	Agency/Author: ATSDR				
	Publication ID: --				
	Publisher: U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES				
	Year Published: 2007				
	Data format (Excel, Access, Word, PDF, etc.): PDF				
Criteria			Yes	No	No but justification why still usable
Overall Conclusions	Toxicological Profile				
	Conclusion - Data are usable for what purpose? (circle one):				
	RI	HHRA	Both		
		X			

Primary Reviewer & date: Kaitlin Ma 3/29/2016- very detailed profile for lead- can be used for HHRA**Secondary Reviewer & date of concurrence:** P.Lobos 7/13/16

Background only

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: TOXICOLOGICAL PROFILE FOR ZINC		
		Agency/Author: ATSDR		
		Publication ID: --		
		Publisher: U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES		
		Year Published: 2005		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		NA	(If "No", no further use of data)
	Were the samples collected within the last 10 years?		NA	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		NA	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			NA
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?			NA
	Are specific sampling locations identified?			NA
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			NA
	Are all data qualifiers clearly defined?			NA
	Was the data collected under an approved QAPP?			NA
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			NA
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA
	If the data were not validated, is there sufficient data present to perform data validation?		NA	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: TOXICOLOGICAL PROFILE FOR ZINC				
	Agency/Author: ATSDR				
	Publication ID: --				
	Publisher: U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES				
	Year Published: 2005				
Data format (Excel, Access, Word, PDF, etc.): PDF					
Criteria		Yes	No	No but justification why still usable	
Overall Conclusions	Toxicological Profile				
	Conclusion - Data are usable for what purpose? (circle one):		RI	HHRA	Both
				X	

Primary Reviewer & date: Kaitlin Ma 3/29/2016- detailed profile for zinc- can be useful for HHRA**Secondary Reviewer & date of concurrence:** P.Lobos 7/13/16**Background Only**

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Five-Year Review Report, Fourth Five-Year Review report for the Cherokee County Superfund Site, Cherokee County, Kansas		
		Agency/Author: U.S. Environmental Protection Agency, Region 7		
		Publication ID: --		
		Publisher: --		
		Year Published: 9/30/2010		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		X	No data available in this reference document.
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		X	(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?		NA	
	(For HHRA only) If the data is surface water, is it accessible to receptors?		NA	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		NA	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		NA	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		NA	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		NA	
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		NA	
	Are specific sampling locations identified?		NA	
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		NA	
	Are all data qualifiers clearly defined?		NA	
	Was the data collected under an approved QAPP?			
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		NA	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		NA	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		NA	
	If the data were not validated, is there sufficient data present to perform data validation?		NA	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Five-Year Review Report, Fourth Five-Year Review report for the Cherokee County Superfund Site, Cherokee County, Kansas		
	Agency/Author: U.S. Environmental Protection Agency, Region 7		
	Publication ID: --		
	Publisher: --		
	Year Published: 9/30/2010		
	Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria			
	Yes	No	No but justification why still usable
Overall Conclusions			
	Only provides general overview of sites and no data are presented in the reference document.		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both

Primary Reviewer & date: L. Hill 3/23/16

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: EPA Reg7 Cherokee County Site Details May 2012		
		Agency/Author: U.S. Environmental Protection Agency		
		Publication ID: EPA ID# KSD980741862		
		Publisher: U.S. Environmental Protection Agency		
		Year Published: 05/2012		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		X	
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		X	(If "No", no further use of data)
	Were the samples collected within the last 10 years?			(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).			(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?			
	Are specific sampling locations identified?			
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			
	Are all data qualifiers clearly defined?			
	Was the data collected under an approved QAPP?			
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: EPA Reg7 Cherokee County Site Details May 2012			
	Agency/Author: U.S. Environmental Protection Agency			
	Publication ID: EPA ID# KSD980741862			
	Publisher: U.S. Environmental Protection Agency			
	Year Published: 05/2012			
	Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria				
		Yes	No	No but justification why still usable
Overall Conclusions	No usable data.			
	Conclusion - Data are usable for what purpose? (circle one):			
	RI	HHRA	Both	

Primary Reviewer & date: L. Hill 3/29/16

Secondary Reviewer & date of concurrence: J.Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: Division of Environment Quality Management Plan, Part III - Stream Biological Monitoring Program, Quality Assurance Management Plan, Revision 4			
		Agency/Author: Kansas Department of Health and Environment: Division of Environment			
		Publication ID: --			
		Publisher: Kansas Department of Health and Environment: Division of Environment			
		Year Published: 2012			
		Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)	
	Were the samples collected within the last 10 years?		NA	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		NA	(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			NA	
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA	
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?			NA
Are specific sampling locations identified?				NA	
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?				NA	
Are all data qualifiers clearly defined?				NA	
Was the data collected under an approved QAPP?				NA	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?			NA	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA	
	If the data were not validated, is there sufficient data present to perform data validation?		NA	(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Division of Environment Quality Management Plan, Part III - Stream Biological Monitoring Program, Quality Assurance Management Plan, Revision 4		
Agency/Author: Kansas Department of Health and Environment: Division of Environment			
Publication ID: --			
Publisher: Kansas Department of Health and Environment: Division of Environment			
Year Published: 2012			
Data format (Excel, Access, Word, PDF, etc.): PDF			

Criteria	Yes	No	No but justification why still usable

Overall Conclusions	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both

Primary Reviewer & date: K. Ma 4/4/2016- sampling plan/QAPP-like document for monitoring stream health

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Division of Environment Quality Management Plan: Part III - Sub-Watershed Water Quality Monitoring Program, revision 1; Part III - Stream Chemistry Monitoring Program, revision 3; Part III - Watershed Management Section, revision 11; Part III - Watershed Planning and Standards Unit, revision 8		
		Agency/Author: Kansas Department of Health and Environment		
		Publication ID: --		
		Publisher: Kansas Department of Health and Environment		
		Year Published: 3/2014		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?			
	Are specific sampling locations identified?			
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			
	Are all data qualifiers clearly defined?			
	Was the data collected under an approved QAPP?			
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Division of Environment Quality Management Plan: Part III - Sub-Watershed Water Quality Monitoring Program, revision 1; Part III - Stream Chemistry Monitoring Program, revision 3; Part III - Watershed Management Section, revision 11; Part III - Watershed Planning and Standards Unit, revision 8		
	Agency/Author: Kansas Department of Health and Environment		
	Publication ID: --		
	Publisher: Kansas Department of Health and Environment		
	Year Published: 3/2014		
	Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria	Yes	No	No but justification why still usable
	If the data were not validated, is there sufficient data present to perform data validation?		
			(If "No", then no further use of data)
Overall Conclusions			
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both

Primary Reviewer & date: H. Mauer 3/22/16

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Public Law 95-87- Surface Mining Control and Reclamation Act of 1977		
		Agency/Author: U.S. Code		
		Publication ID: --		
		Publisher: --		
		Year Published: 1977		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		NA	(If "No", no further use of data)
	Were the samples collected within the last 10 years?		NA	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		NA	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			NA
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?				NA
Are specific sampling locations identified?				NA
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?				NA
Are all data qualifiers clearly defined?				NA
Was the data collected under an approved QAPP?				NA
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA
	If the data were not validated, is there sufficient data present to perform data validation?		NA	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Public Law 95-87- Surface Mining Control and Reclamation Act of 1977		
	Agency/Author: U.S. Code		
	Publication ID: --		
	Publisher: --		
	Year Published: 1977		
Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria			
Overall Conclusions	State regulation document - No data applicable to the HHRA. Does not appear to be useful for either RI/HHRA.		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both

Primary Reviewer & date: K. Ma 3/25/2016

Secondary Reviewer & date of concurrence: P. Lobos 7/13/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: Synthesis of Water, Sediment, and Biological Data Using Hazard Quotients to Assess Ecosystem Health			
		Agency/Author: U.S. Department of the Interior/U.S. Geological Survey			
		Publication ID: Professional Paper 1652-C			
		Publisher: Finger, Farag, Nimick, Church, Sole			
		Year Published: 03/2005			
		Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?			X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).			X	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?		X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			X	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			X	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		X	X	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		X	X	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		X		biofilm and tissues from invertebrates and fish
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
Are sample matrix, date of sample collection, analytical method, and units stated for all results?			X	No data tables available in reference document	
Are specific sampling locations identified?		X		On figure, but no coordinates.	
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			X	No data tables available in reference document	
Are all data qualifiers clearly defined?			X	No data tables available in reference document	
Was the data collected under an approved QAPP?			X	Not mentioned in text.	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?			X	No data tables available in reference document

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data																																							
	Title of document: Synthesis of Water, Sediment, and Biological Data Using Hazard Quotients to Assess Ecosystem Health																																							
	Agency/Author: U.S. Department of the Interior/U.S. Geological Survey																																							
	Publication ID: Professional Paper 1652-C																																							
	Publisher: Finger, Farag, Nimick, Church, Sole																																							
	Year Published: 03/2005																																							
	Data format (Excel, Access, Word, PDF, etc.): PDF																																							
<table border="1"> <thead> <tr> <th>Criteria</th> <th>Yes</th> <th>No</th> <th>No but justification why still usable</th> </tr> </thead> <tbody> <tr> <td rowspan="4">AF 5 - Evaluation and Review</td> <td colspan="4">The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.</td> </tr> <tr> <td>Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?</td> <td></td> <td>X</td> <td>No mention of data validation.</td> </tr> <tr> <td>Is the data considered valid for use (i.e., the data were not rejected during validation)?</td> <td></td> <td>X</td> <td></td> </tr> <tr> <td>If the data were not validated, is there sufficient data present to perform data validation?</td> <td></td> <td>X</td> <td>(If "No", then no further use of data)</td> </tr> <tr> <td rowspan="3">Overall Conclusions</td> <td colspan="4">Reference document is not usable.</td> </tr> <tr> <td colspan="2"></td> <td>RI</td> <td>HHRA</td> <td>Both</td> </tr> <tr> <td colspan="2">Conclusion - Data are usable for what purpose? (circle one):</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>					Criteria	Yes	No	No but justification why still usable	AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		X	No mention of data validation.	Is the data considered valid for use (i.e., the data were not rejected during validation)?		X		If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)	Overall Conclusions	Reference document is not usable.						RI	HHRA	Both	Conclusion - Data are usable for what purpose? (circle one):				
Criteria	Yes	No	No but justification why still usable																																					
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.																																							
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	If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)																																				
Overall Conclusions	Reference document is not usable.																																							
			RI	HHRA	Both																																			
	Conclusion - Data are usable for what purpose? (circle one):																																							

Primary Reviewer & date: L. Hill 3/23/2016

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Title 30 - Mineral Lands and Mining, CHAPTER 25—SURFACE MINING CONTROL AND RECLAMATION		
		Agency/Author: U.S. Code		
		Publication ID: --		
		Publisher: --		
		Year Published: 2006		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?			NA
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		NA	(If "No", no further use of data)
	Were the samples collected within the last 10 years?		NA	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		NA	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			NA
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?			NA
	Are specific sampling locations identified?			NA
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			NA
	Are all data qualifiers clearly defined?			NA
	Was the data collected under an approved QAPP?			NA
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			NA
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: Title 30 - Mineral Lands and Mining, CHAPTER 25—SURFACE MINING CONTROL AND RECLAMATION			
	Agency/Author: U.S. Code			
	Publication ID: --			
	Publisher: --			
	Year Published: 2006			
Data format (Excel, Access, Word, PDF, etc.): PDF				
Criteria				
		Yes	No	No but justification why still usable
Overall Conclusions	State regulation document - No data applicable to the HHRA. Not usable for either purposes.			
	Conclusion - Data are usable for what purpose? (circle one):			
		RI	HHRA	Both

Primary Reviewer & date: K. Ma 3/24/2016**Secondary Reviewer & date of concurrence:** P. Lobos 7/13/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: Decision Making at Contaminated Sites- Issues and Options in Human Health Risk Assessment			
		Agency/Author: Interstate Technology and Regulatory Council (ITRC)- Risk Assessment Team			
		Publication ID: --			
		Publisher: Interstate Technology and Regulatory Council (ITRC)			
		Year Published: 2015			
		Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		NA	(If "No", no further use of data)	
	Were the samples collected within the last 10 years?		NA	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		NA	(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			NA	
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA	
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?			NA
Are specific sampling locations identified?				NA	
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?				NA	
Are all data qualifiers clearly defined?				NA	
Was the data collected under an approved QAPP?				NA	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?			NA	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA	
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: Decision Making at Contaminated Sites- Issues and Options in Human Health Risk Assessment			
	Agency/Author: Interstate Technology and Regulatory Council (ITRC)- Risk Assessment Team			
	Publication ID: --			
	Publisher: Interstate Technology and Regulatory Council (ITRC)			
	Year Published: 2015			
	Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria				
		Yes	No	No but justification why still usable
Overall Conclusions	Discusses types of risk assessing in no context to Tar Creek/Mining. ITRC HHRA guidance document - No data			
	Conclusion - Data are usable for what purpose? (circle one):			
	RI	HHRA	Both	

Primary Reviewer & date: K. Ma 3/29/2016

Secondary Reviewer & date of concurrence: P. Lobos 7/13/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Development and Evaluation of Sediment and Pore-Water Toxicity Thresholds to Support Sediment Quality Assessments in the Tri-State Mining District (TSMD), Missouri, Oklahoma, and Kansas - Volume II: Appendices 1 through 4		
		Agency/Author: MacDonald Environmental Sciences Ltd./U.S. Geological Survey/CH2M Hill; Donald D. MacDonald, Dawn E. Smorong, Christopher G. Ingersoll, John M. Besser, William G. Brumbaugh, Nile Kemble, Thomas W. May, Christopher D. Ivey, Scott Irving, and Margaret O'Hare		
		Publication ID: --		
		Publisher: MacDonald Environmental Sciences Ltd.		
		Year Published: 02/2009		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).			
	(If "No", no further use of data)			
	Were the samples collected within the last 10 years?			
	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)			
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).			
	(If "No", no further use of data)			
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			
(For HHRA only) If the data is mine discharge, is it accessible to receptors?				
If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?				
If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?				
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?			
	Are specific sampling locations identified?			
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			
	Are all data qualifiers clearly defined?			
	Was the data collected under an approved QAPP?			
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Development and Evaluation of Sediment and Pore-Water Toxicity Thresholds to Support Sediment Quality Assessments in the Tri-State Mining District (TSMD), Missouri, Oklahoma, and Kansas - Volume II: Appendices 1 through 4		
		Agency/Author: MacDonald Environmental Sciences Ltd./U.S. Geological Survey/CH2M Hill; Donald D. MacDonald, Dawn E. Smorong, Christopher G. Ingersoll, John M. Besser, William G. Brumbaugh, Nile Kemble, Thomas W. May, Christopher D. Ivey, Scott Irving, and Margaret O'Hare		
		Publication ID: --		
		Publisher: MacDonald Environmental Sciences Ltd.		
		Year Published: 02/2009		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)
Overall Conclusions				
	Conclusion - Data are usable for what purpose? (circle one):		RI	HHRA

Primary Reviewer & date: L. Hill 3/30/16

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Effects of mining-derived metals on riffle-dwelling crayfish in southwestern Missouri and southeastern Kansas of the Tri-State Mining District, USA		
		Agency/Author: Ann L. Allert, Robert J. DiStefano, Christopher J. Schmitt, James F. Fairchild, and William G. Brumbaugh		
		Publication ID:08-NRDAR-03		
		Publisher:USGS and Missouri Department of Conservation		
		Year Published: 2011		
		Data format (Excel, Access, Word, PDF, etc.)		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?		X	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		X	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?	X		
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?	X		
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X		Crayfish
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?	X		
	Are all data qualifiers clearly defined?	X		
	Was the data collected under an approved QAPP?		X	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA
	If the data were not validated, is there sufficient data present to perform data validation?	x		(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: Effects of mining-derived metals on riffle-dwelling crayfish in southwestern Missouri and southeastern Kansas of the Tri-State Mining District, USA			
	Agency/Author: Ann L. Allert, Robert J. DiStefano, Christopher J. Schmitt, James F. Fairchild, and William G. Brumbaugh			
	Publication ID:08-NRDAR-03			
	Publisher:USGS and Missouri Department of Conservation			
	Year Published: 2011			
	Data format (Excel, Access, Word, PDF, etc.)			
Criteria				
		Yes	No	No but justification why still usable
Overall Conclusions				
	Conclusion - Data are usable for what purpose? (circle one):			
		RI	HHRA	Both

Primary Reviewer & date: H. Mauer 3/31/16

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Adverse health effects in Canada geese (branta canadensis) associated with waste from zinc and lead mines in the Tri-State Mining District		
		Agency/Author: Merwe, Carpenter and Neitfield		
		Publication ID: --		
		Publisher: Kansas State University College of Veterinary Medicine		
		Year Published: --		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?			(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			NA
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?	X		NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?	X		NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		X	
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?	X		
	Are all data qualifiers clearly defined?		X	
	Was the data collected under an approved QAPP?		X	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Adverse health effects in Canada geese (branta canadensis) associated with waste from zinc and lead mines in the Tri-State Mining District		
	Agency/Author: Merwe, Carpenter and Neitfield		
	Publication ID: --		
	Publisher: Kansas State University College of Veterinary Medicine		
	Year Published: --		
	Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria	Yes	No	No but justification why still usable
Overall Conclusions			
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both
	X	X	

Primary Reviewer & date: H. Mauer 4/5/16

Secondary Reviewer & date of concurrence: P. Lobos 5/4/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Effects of lead-zinc mining on crayfish density in the Spring River watershed in southwest Missouri, Tri-State Mining District, USA		
		Agency/Author: Columbia Environmental Research Center		
		Publication ID: --		
		Publisher: Columbia Environmental Research Center		
		Year Published: 2009		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		NA	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		NA	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?		NA	
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?				NA
Are specific sampling locations identified?				NA
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?				NA
Are all data qualifiers clearly defined?				NA
Was the data collected under an approved QAPP?				NA
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			NA
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA
	If the data were not validated, is there sufficient data present to perform data validation?		NA	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Effects of lead-zinc mining on crayfish density in the Spring River watershed in southwest Missouri, Tri-State Mining District, USA		
	Agency/Author: Columbia Environmental Research Center		
	Publication ID: --		
	Publisher: Columbia Environmental Research Center		
	Year Published: 2009		
	Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria			
		Yes	No
		No but justification why still usable	
Overall Conclusions			
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both

Primary Reviewer & date: K. Ma 4/4/2016

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Sampling Analysis Plan and Quality Assurance Project Plan for a Pilot Study to Assess Volume of Mine Waste and Concentration of Selected Metals in Stream and Floodplain Sediments Within the Tri-State Mining District in Kansas, Missouri, and Oklahoma		
		Agency/Author: U.S. Geological Survey; Missouri and Oklahoma Water Science Centers		
		Publication ID: --		
		Publisher: U.S. Fish and Wildlife Service		
		Year Published: 05/2011		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		X	
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		X	(If "No", no further use of data)
	Were the samples collected within the last 10 years?			(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?			
	Are specific sampling locations identified?			
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			
	Are all data qualifiers clearly defined?			
	Was the data collected under an approved QAPP?			
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: Sampling Analysis Plan and Quality Assurance Project Plan for a Pilot Study to Assess Volume of Mine Waste and Concentration of Selected Metals in Stream and Floodplain Sediments Within the Tri-State Mining District in Kansas, Missouri, and Oklahoma				
	Agency/Author: U.S. Geological Survey; Missouri and Oklahoma Water Science Centers				
	Publication ID: --				
	Publisher: U.S. Fish and Wildlife Service				
	Year Published: 05/2011				
	Data format (Excel, Access, Word, PDF, etc.): PDF				
Criteria			Yes	No	No but justification why still usable
Overall Conclusions	No data presented in this reference document. Document is a sampling analysis plan/QAPP for sampling in the six exposure focus areas.				
	Conclusion - Data are usable for what purpose? (circle one):				
		RI	HHRA	Both	

Primary Reviewer & date: L. Hill 3/25/16

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document : FINAL PHASE I DAMAGE ASSESSMENT PLAN FOR SOUTHEAST MISSOURI LEAD MINING DISTRICT: BIG RIVER MINE TAILINGS SUPERFUND SITE, ST. FRANCOIS COUNTY AND VIBURNUM TREND SITES, REYNOLDS, CRAWFORD, WASHINGTON, AND IRON COUNTIES		
		Agency/Author: David E. Mosby and John S. Weber, U.S. Fish and Wildlife Service, U.S. Department of the Interior, Frances Klahr Missouri Department of Natural Resources		
		Publication ID: --		
		Publisher: --		
		Year Published: January 2009		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?		N/A	See notes in "overall conclusions" below
	(For HHRA only) If the data is surface water, is it accessible to receptors?		N/A	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		N/A	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		N/A	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		N/A	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		N/A	
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?			N/A	
Are specific sampling locations identified?			N/A	
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			N/A	
Are all data qualifiers clearly defined?			N/A	
Was the data collected under an approved QAPP?			N/A	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		N/A	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document : FINAL PHASE I DAMAGE ASSESSMENT PLAN FOR SOUTHEAST MISSOURI LEAD MINING DISTRICT: BIG RIVER MINE TAILINGS SUPERFUND SITE, ST. FRANCOIS COUNTY AND VIBURNUM TREND SITES, REYNOLDS, CRAWFORD, WASHINGTON, AND IRON COUNTIES		
		Agency/Author: David E. Mosby and John S. Weber, U.S. Fish and Wildlife Service, U.S. Department of the Interior, Frances Klahr Missouri Department of Natural Resources		
		Publication ID: --		
		Publisher: --		
		Year Published: January 2009		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		N/A	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		N/A	
	If the data were not validated, is there sufficient data present to perform data validation?		N/A	(If "No", then no further use of data)
Overall Conclusions	This is an Assessment Plan. This document does not include data from this study. It only references historical data. Data collected outside of the six exposure areas.			
	Conclusion - Data are usable for what purpose? (circle one):		RI	HHRA

Primary Reviewer & date: W. Lynch 3/22/16

Secondary Reviewer & date of concurrence: P. Lobos 7/13/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: DRAFT: Remedial Investigation Report Tar Creek OU4 RI/FS Program		
		Agency/Author: AATA INTERNATIONAL, INC.		
		Publication ID: --		
		Publisher: --		
		Year Published: December 2005		
		Data format (Excel, Access, Word, PDF, etc.): Word		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			N/A
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?	X		
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X		
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X	Most of this info is present but may not be shown for "all results"
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			Yes for some but not all
	Are all data qualifiers clearly defined?		X	
	Was the data collected under an approved QAPP?	X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			Not sure
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information
Operable Unit 5
Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: DRAFT: Remedial Investigation Report Tar Creek OU4 RI/FS Program			
	Agency/Author: AATA INTERNATIONAL, INC.			
	Publication ID: --			
	Publisher: --			
	Year Published: December 2005			
Data format (Excel, Access, Word, PDF, etc.): Word				
Criteria		Yes	No	No but justification why still usable
Overall Conclusions				
	Conclusion - Data are usable for what purpose? (circle one):			
	RI	HHRA	Both	
	X			

Primary Reviewer & date: W. Lynch 3/23/16
Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16
Notes:
CSM - Conceptual Site Model
HHRA - Human Health Risk Assessment
N&E - Nature and Extent
QAPP - Quality Assurance Project Plan
RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Final: Data Gap Analysis Report Tar Creek OU4 RI/FS Program		
		Agency/Author: AATA International, Inc.		
		Publication ID: --		
		Publisher: AATA International, Inc.		
		Year Published: 09/2004		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?		X	
	(For HHRA only) If the data is surface water, is it accessible to receptors?		X	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		X	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		X	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		X	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		X	
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?			X	
Are specific sampling locations identified?			X	
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			X	some data use <, but other uses 0
Are all data qualifiers clearly defined?			X	
Was the data collected under an approved QAPP?		X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		X	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Final: Data Gap Analysis Report Tar Creek OU4 RI/FS Program		
Agency/Author: AATA International, Inc.			
Publication ID: --			
Publisher: AATA International, Inc.			
Year Published: 09/2004			
Data format (Excel, Access, Word, PDF, etc.): PDF			

Criteria	Yes	No	No but justification why still usable

Overall Conclusions	This report has limited usable data because it was a gap analysis, and therefore focused on old data, much of which is 25-30 years old. This could potentially be used for background information, but not quantitatively.		
	Conclusion - Data are usable for what purpose? (circle one):		

	RI	HHRA	Both
	X		

Primary Reviewer & date: W. Kite 3/29/16

Secondary Reviewer & date of concurrence: J. Ynfante 6/3/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: Washoe Tribe Human Health Risk Assessment Exposure Scenario for the Leviathan Mine Superfund Site			
		Agency/Author: Dr. Barbara Harper, DABT AESE, Inc.			
		Publication ID: --			
		Publisher: --			
		Year Published: March 2005			
		Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		N/A		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		N/A	(If "No", no further use of data)	
	Were the samples collected within the last 10 years?		N/A	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		N/A	(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?		N/A		
	(For HHRA only) If the data is surface water, is it accessible to receptors?		N/A		
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		N/A		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		N/A		
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		N/A		
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		N/A		
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?		N/A	
Are specific sampling locations identified?			N/A		
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			N/A		
Are all data qualifiers clearly defined?			N/A		
Was the data collected under an approved QAPP?			N/A		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?				
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		N/A		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		N/A		
	If the data were not validated, is there sufficient data present to perform data validation?		N/A	(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Washoe Tribe Human Health Risk Assessment Exposure Scenario for the Leviathan Mine Superfund Site		
	Agency/Author: Dr. Barbara Harper, DABT AESE, Inc.		
	Publication ID: --		
	Publisher: --		
	Year Published: March 2005		
	Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria			
		Yes	No
		No but justification why still usable	
Overall Conclusions	No study/investigation performed for the purpose of this report. "This document presents the Washoe Exposure Scenario for the Leviathan Mine and its affected area. An exposure scenario is a narrative and numerical representation of the interactions between human and/or ecological receptors and their immediate environment." No quantitative data, outside of six exposure areas.		
	Conclusion - Data are usable for what purpose? (circle one):	RI	HHRA
			Both

Primary Reviewer & date: W. Lynch 3/23/16

Secondary Reviewer & date of concurrence: P. Lobos 7/13/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Site Characterization Report: Sediments, Surface Water, and Vegetation of Tar Creek, Lytle Creek, and Beaver Creek, Oklahoma		
		Agency/Author: F.E. Kirschner/AESE, Inc.		
		Publication ID: --		
		Publisher: Quapaw Tribe of Oklahoma		
		Year Published: 01/2008		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Four Mile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?	X		
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?	X		
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?	X		
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X		
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?	X		
	Are all data qualifiers clearly defined?	X		
	Was the data collected under an approved QAPP?	X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: Site Characterization Report: Sediments, Surface Water, and Vegetation of Tar Creek, Lytle Creek, and Beaver Creek, Oklahoma			
	Agency/Author: F.E. Kirschner/AESE, Inc.			
	Publication ID: --			
	Publisher: Quapaw Tribe of Oklahoma			
	Year Published: 01/2008			
Data format (Excel, Access, Word, PDF, etc.): PDF				
Criteria				
		Yes	No	No but justification why still usable
Overall Conclusions	This reference document provides statistical data based on data collected for each focus area. Document/data could be useful for background info.			
	Conclusion - Data are usable for what purpose? (circle one):			
	RI	HHRA	Both	
			X	

Primary Reviewer & date: L. Hill 3/25/16**Secondary Reviewer & date of concurrence:** J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: QUAPAW TRADITIONAL LIFEWAYS SCENARIO		
		Agency/Author: Barbara Harper, PhD, DABT, AESE, Inc		
		Publication ID: --		
		Publisher: Harper		
		Year Published: 2008		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		N/A	
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		N/A	(If "No", no further use of data)
	Were the samples collected within the last 10 years?		N/A	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?		N/A	
	(For HHRA only) If the data is surface water, is it accessible to receptors?		N/A	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		N/A	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		N/A	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		N/A	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		N/A	
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		N/A	
	Are specific sampling locations identified?		N/A	
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		N/A	
	Are all data qualifiers clearly defined?		N/A	
	Was the data collected under an approved QAPP?		N/A	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		N/A	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		N/A	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		N/A	
	If the data were not validated, is there sufficient data present to perform data validation?		N/A	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: QUAPAW TRADITIONAL LIFEWAYS SCENARIO		
Agency/Author: Barbara Harper, PhD, DABT, AESE, Inc			
Publication ID: --			
Publisher: Harper			
Year Published: 2008			
Data format (Excel, Access, Word, PDF, etc.): PDF			

Criteria	Yes	No	No but justification
			why still usable
Overall Conclusions	"The purpose of this report is to describe Quapaw tribal traditional cultural uses of natural resources, and to present them in a format typically used by regulatory agencies during evaluation of baseline environmental risks." -WL		
	Good qualitative discussion of consumed/used biota for subsistence/medicinal/ceremonial use - but no usable/quantitative data. -PL		
	Conclusion - Data are usable for what purpose? (circle one):		

RI	HHRA	Both
	X	

Primary Reviewer & date: W. Lynch 3/24/16

Background Only

Secondary Reviewer & date of concurrence: P. Lobos 7/13/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Subsistence Exposure Scenarios for Tribal Applications		
		Agency/Author: National Institute of Health/ Barbara Harper, Anna Harding, Stuart Harris, and Patricia Berger		
		Publication ID: --		
		Publisher: NIH		
		Year Published: 2012		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		NA	(If "No", no further use of data)
	Were the samples collected within the last 10 years?		NA	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?			NA
	Are specific sampling locations identified?			NA
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			NA
	Are all data qualifiers clearly defined?			NA
	Was the data collected under an approved QAPP?			NA
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA
	If the data were not validated, is there sufficient data present to perform data validation?		NA	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data																						
	Title of document: Subsistence Exposure Scenarios for Tribal Applications																						
	Agency/Author: National Institute of Health/ Barbara Harper, Anna Harding, Stuart Harris, and Patricia Berger																						
	Publication ID: --																						
	Publisher: NIH																						
	Year Published: 2012																						
Data format (Excel, Access, Word, PDF, etc.): PDF																							
Criteria																							
<table border="1"> <thead> <tr> <th></th> <th>Yes</th> <th>No</th> <th>No but justification why still usable</th> </tr> </thead> <tbody> <tr> <td>Overall Conclusions</td> <td colspan="3">Good qualitative discussion of consumed/used biota for subsistence/medicinal/ceremonial use - but no usable/quantitative data.</td> </tr> <tr> <td></td> <td colspan="3">Conclusion - Data are usable for what purpose? (circle one):</td> </tr> <tr> <td></td> <td>RI</td> <td>HHRA</td> <td>Both</td> </tr> <tr> <td></td> <td></td> <td>X</td> <td></td> </tr> </tbody> </table>					Yes	No	No but justification why still usable	Overall Conclusions	Good qualitative discussion of consumed/used biota for subsistence/medicinal/ceremonial use - but no usable/quantitative data.				Conclusion - Data are usable for what purpose? (circle one):				RI	HHRA	Both			X	
	Yes	No	No but justification why still usable																				
Overall Conclusions	Good qualitative discussion of consumed/used biota for subsistence/medicinal/ceremonial use - but no usable/quantitative data.																						
	Conclusion - Data are usable for what purpose? (circle one):																						
	RI	HHRA	Both																				
		X																					

Primary Reviewer & date: Kaitlin Ma 3/28/2016- useful for HHRA, no samples taken

Secondary Reviewer & date of concurrence: P. Lobos 7/13/16

Background only

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of Document: Sedimentation and Occurrence and Trends of Selected Chemical Constituents in Bottom Sediment, Empire Lake, Cherokee County, Kansas, 1905-2005		
		Agency/Author: USGS; Kyle E. Juracek		
		Publication ID: Scientific Investigations Report 2006-5307		
		Publisher: U.S. Department of the Interior, U.S. Geological Survey		
		Year Published: 2006		
		Data Format: PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	Samples collected from Empire Lake and the Spring River segment upstream of Empire Lake; no further use of data
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			Unknown
	(For HHRA only) If the data is surface water, is it accessible to receptors?			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X	
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?	X		
	Are all data qualifiers clearly defined?			N/A
	Was the data collected under an approved QAPP?			Unknown
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		Statistical validation
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of Document: Sedimentation and Occurrence and Trends of Selected Chemical Constituents in Bottom Sediment, Empire Lake, Cherokee County, Kansas, 1905-2005		
	Agency/Author: USGS; Kyle E. Juracek		
	Publication ID: Scientific Investigations Report 2006-5307		
	Publisher: U.S. Department of the Interior, U.S. Geological Survey		
	Year Published: 2006		
	Data Format: PDF		
Criteria			
	Yes	No	No but justification why still usable
Overall Conclusions	Document includes data from sediment samples in Empire Lake and the upstream reaches of Spring River and therefore is not one of the 6 exposure areas of interest, no further use of data but could be used for background info.		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both
	X		

Primary Reviewer & date: S. Scott 3/26/16

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Risk Management Considerations for Terrestrial Vermivores		
		Agency/Author: Jasper County Biological Technical Assistance Group		
		Publication ID: --		
		Publisher: New Fields		
		Year Published: 2000		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		X	
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			NA
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			risks were modeled for vermivores
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X	
	Are specific sampling locations identified?		X	
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X	
	Are all data qualifiers clearly defined?		X	
	Was the data collected under an approved QAPP?		X	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		X	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		X	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		X	NA
	If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data					
	Title of document: Risk Management Considerations for Terrestrial Vermivores					
	Agency/Author: Jasper County Biological Technical Assistance Group					
	Publication ID: --					
	Publisher: New Fields					
	Year Published: 2000					
Data format (Excel, Access, Word, PDF, etc.): PDF						
Criteria			Yes	No	No but justification why still usable	
Overall Conclusions				RI	HHRA	Both
	Conclusion - Data are usable for what purpose? (circle one):				X	Background

Primary Reviewer & date: K. Ma 4/1/2016- can be used for background (over 10 years, not in sampling site)

Secondary Reviewer & date of concurrence: J. Ynfante 5/11/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Toxicity Assessment of Metal Concentrations in Chat-Impacted Pasture Grass as CB150 (Imbeau Weiss)		
		Agency/Author: New Fields/ Kerri Sitler, David Hinrichs		
		Publication ID: --		
		Publisher: New Fields		
		Year Published: 2013		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X		grass
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
	Are specific sampling locations identified?		X	
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?	X		
	Are all data qualifiers clearly defined?	X		
	Was the data collected under an approved QAPP?			NA
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			Unsure
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			Unknown
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?			Some QC provided

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: Toxicity Assessment of Metal Concentrations in Chat-Impacted Pasture Grass as CB150 (Imbeau Weiss)			
	Agency/Author: New Fields/ Kerri Sitler, David Hinrichs			
	Publication ID: --			
	Publisher: New Fields			
	Year Published: 2013			
	Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria				
		Yes	No	No but justification why still usable
Overall Conclusions	This document studies grass samples in various chat locations. The findings do not indicate a high level of metal concentrations in grass. Samples taken less than 10 years in study area and lab report included - may be useful for HHRA.			
	Conclusion - Data are usable for what purpose? (circle one):			
	RI	HHRA	Both	
		X		

Primary Reviewer & date: K. Ma- samples taken less than 10 years ago, can be used for HHRA**Secondary Reviewer & date of concurrence:** J. Ynfante 5/11/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Rhizoremediation: A Pragmatic Approach for Remediation of Heavy Metal-Contaminated Soil		
		Agency/Author: Department of Molecular Biology, School of Biological Sciences, Madurai Kamaraj/ Velmurugan Ganesan		
		Publication ID: --		
		Publisher: Department of Molecular Biology, School of Biological Sciences, Madurai Kamaraj		
		Year Published: 2012		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?			NA
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		X	(If "No", no further use of data)
	Were the samples collected within the last 10 years?		NA	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		NA	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			NA
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?				NA
Are specific sampling locations identified?				NA
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?				NA
Are all data qualifiers clearly defined?				NA
Was the data collected under an approved QAPP?				NA
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			NA
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA
	If the data were not validated, is there sufficient data present to perform data validation?		NA	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Rhizoremediation: A Pragmatic Approach for Remediation of Heavy Metal-Contaminated Soil		
Agency/Author: Department of Molecular Biology, School of Biological Sciences, Madurai Kamaraj/ Velmurugan Ganesan			
Publication ID: --			
Publisher: Department of Molecular Biology, School of Biological Sciences, Madurai Kamaraj			
Year Published: 2012			
Data format (Excel, Access, Word, PDF, etc.): PDF			

Criteria	Yes	No	No but justification why								
			still usable								
Overall Conclusions	This document is a literature review of rhizoremediation (and other methods) of metals in the soils. Can be useful background for both HHRA/RI but no samples collected in study area.										
	<table border="1"><thead><tr><th>RI</th><th>HHRA</th><th>Both</th></tr></thead><tbody><tr><td colspan="3">Conclusion - Data are usable for what purpose? (circle one):</td></tr><tr><td></td><td></td><td>Background</td></tr></tbody></table>			RI	HHRA	Both	Conclusion - Data are usable for what purpose? (circle one):				
RI	HHRA	Both									
Conclusion - Data are usable for what purpose? (circle one):											
		Background									

Primary Reviewer & date: K. Ma 4/4/2016

Secondary Reviewer & date of concurrence: J. Ynfante 5/11/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Groundwater-Flow Model of the Ozark Plateaus Aquifer System, Northwestern Arkansas, Southeastern Kansas, Southwestern Missouri, and Northeastern Oklahoma		
		Agency/Author: USGS/DOI :John B. Czarnecki, Jonathan A. Gillip, Perry M. Jones, and Daniel S. Yeatts		
		Publication ID: Scientific Investigations Report 2009-5148		
		Publisher: USGS		
		Year Published: 2010		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?	X		
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		X	NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		X	NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		X	NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		X	NA
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		This is groundwater flow data
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X	NA
	Are all data qualifiers clearly defined?		X	NA
	Was the data collected under an approved QAPP?		X	NA
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			NA
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: Groundwater-Flow Model of the Ozark Plateaus Aquifer System, Northwestern Arkansas, Southeastern Kansas, Southwestern Missouri, and Northeastern Oklahoma			
	Agency/Author: USGS/DOI :John B. Czarnecki, Jonathan A. Gillip, Perry M. Jones, and Daniel S. Yeatts			
	Publication ID: Scientific Investigations Report 2009-5148			
	Publisher: USGS			
	Year Published: 2010			
	Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria				
	Yes	No	No but justification why still usable	
	If the data were not validated, is there sufficient data present to perform data validation?		(If "No", then no further use of data)	
Overall Conclusions				
	Conclusion - Data are usable for what purpose? (circle one):			
	RI	HHRA	Both	
	X			

Primary Reviewer & date: H. Mauer 3/23/16

background and flow rate data

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Draft Ecological Preliminary Remediation Goals Cherokee County Superfund Site		
		Agency/Author: ENSV/DISO/ Venessa Madden		
		Publication ID: --		
		Publisher: ENSV/DISO		
		Year Published: 2006		
		Data format (Excel, Access, Word, PDF, etc.) PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X		American Woodcock and Short-Tailed Brew
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?			X	
Are specific sampling locations identified?			X	
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			X	
Are all data qualifiers clearly defined?			X	
Was the data collected under an approved QAPP?				NA
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		X	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			Unknown
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA
	If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: Draft Ecological Preliminary Remediation Goals Cherokee County Superfund Site			
	Agency/Author: ENSV/DISO/ Venessa Madden			
	Publication ID: --			
	Publisher: ENSV/DISO			
	Year Published: 2006			
Data format (Excel, Access, Word, PDF, etc.) PDF				
Criteria				
		Yes	No	No but justification why still usable
Overall Conclusions				
	Conclusion - Data are usable for what purpose? (circle one):			
		RI	HHRA	Both
				Background

Primary Reviewer & date: K. Ma 3/31/2016

Secondary Reviewer & date of concurrence: J. Ynfante 5/11/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Heavy Metals in Fluvial Sediments of the Picher Mining Field, Northeast Oklahoma		
		Agency/Author: Randa Noelle Hope		
		Publication ID: --		
		Publisher: --		
		Year Published: 1999		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		x	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		X	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X		
Are specific sampling locations identified?		X		
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X		
Are all data qualifiers clearly defined?			X	
Was the data collected under an approved QAPP?			X	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		X	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data						
	Title of document: Heavy Metals in Fluvial Sediments of the Picher Mining Field, Northeast Oklahoma						
	Agency/Author: Randa Noelle Hope						
	Publication ID: --						
	Publisher: --						
	Year Published: 1999						
Data format (Excel, Access, Word, PDF, etc.): PDF							
Criteria				Yes	No	No but justification why still usable	
Overall Conclusions							
	Conclusion - Data are usable for what purpose? (circle one):						
					RI	HHRA	Both

Primary Reviewer & date: H. Mauer 4/5/16

Secondary Reviewer & date of concurrence: J. Ynfante 5/11/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Occurrence and Variability of Mining-Related Lead and Zinc in the Spring River Flood Plain and Tributary Flood Plains, Cherokee County, Kansas, 2009-11		
		Agency/Author: Kyle Juracek		
		Publication ID: Scientific Investigations Report 2013-5028		
		Publisher: U.S. Department of the Interior U.S. Geological Survey		
		Year Published: 2013		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?	X		
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?	X		
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X	
	Are all data qualifiers clearly defined?		X	
	Was the data collected under an approved QAPP?		X	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			NA
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		X	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Occurrence and Variability of Mining-Related Lead and Zinc in the Spring River Flood Plain and Tributary Flood Plains, Cherokee County, Kansas, 2009-11		
	Agency/Author: Kyle Juracek		
	Publication ID: Scientific Investigations Report 2013-5028		
	Publisher: U.S. Department of the Interior U.S. Geological Survey		
	Year Published: 2013		
	Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria	Yes	No	No but justification why still usable
Overall Conclusions			
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both
			X

Primary Reviewer & date: H. Mauer 5/10/16

Secondary Reviewer & date of concurrence: J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Risk Evaluation of consumption of beef and milk taken from cows raised on a contaminated area at the Tar Creek Superfund Site		
		Agency/Author: Ghassan A. Khoury/ Superfund Technical Support Team (6SF-LT)		
		Publication ID: --		
		Publisher: Superfund Technical Support Team (6SF-LT)		
		Year Published: 2004		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		X	10 soil samples
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		X	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		X	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		X	
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?			X	
Are specific sampling locations identified?			X	
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			X	
Are all data qualifiers clearly defined?			X	
Was the data collected under an approved QAPP?			X	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		X	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		X	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		X	
	If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Risk Evaluation of consumption of beef and milk taken from cows raised on a contaminated area at the Tar Creek Superfund Site		
	Agency/Author: Ghassan A. Khoury/ Superfund Technical Support Team (6SF-LT)		
	Publication ID: --		
	Publisher: Superfund Technical Support Team (6SF-LT)		
	Year Published: 2004		
	Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria	Yes	No	No but justification why still usable
Overall Conclusions	This document is a literature review of rhizoremediation (and other methods) of metals in the soils- can be useful for both HHRA/RI (no samples taken/not in study area).		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both
		X	

Primary Reviewer & date: K. Ma 4/4/2016- can be used for HHRA/background

Secondary Reviewer & date of concurrence: J. Ynfante 5/11/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Sediment storage and severity of contamination in a shallow reservoir affected by historical lead and zinc mining		
		Agency/Author: Kyle E. Juracek		
		Publication ID: DOI 10.1007/s00254-007-0926-0		
		Publisher: Environmental Geology		
		Year Published: 2007		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?		X	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			unsure
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?	X		
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?	X		
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		X	
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X	
	Are all data qualifiers clearly defined?		X	
	Was the data collected under an approved QAPP?		X	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		X	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		X	
	If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Sediment storage and severity of contamination in a shallow reservoir affected by historical lead and zinc mining		
	Agency/Author: Kyle E. Juracek		
	Publication ID: DOI 10.1007/s00254-007-0926-0		
	Publisher: Environmental Geology		
	Year Published: 2007		
	Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria	Yes	No	No but justification why still usable
Overall Conclusions	Data collected outside of the six exposure areas.		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both

Primary Reviewer & date: H. Mauer 4/6/16

Secondary Reviewer & date of concurrence: P. Lobos 7/13/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Concentrations of Cadmium, Lead, and Zinc in Fish from Mining-Influenced Waters of Northeastern Oklahoma: Sampling of Blood, Carcass, and Liver for Aquatic Biomonitoring		
		Agency/Author: William G. Brumbaugh, Christopher J. Schmitt, Thomas W. May		
		Publication ID/DOI: 10.1007/s00244-004-0172-3		
		Publisher: USGS		
		Year Published: 2005		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X		
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X	
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?	X		
	Are all data qualifiers clearly defined?		X	
	Was the data collected under an approved QAPP?		X	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			Unknown
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data																						
	Title of document: Concentrations of Cadmium, Lead, and Zinc in Fish from Mining-Influenced Waters of Northeastern Oklahoma: Sampling of Blood, Carcass, and Liver for Aquatic Biomonitoring																						
	Agency/Author: William G. Brumbaugh, Christopher J. Schmitt, Thomas W. May																						
	Publication ID:DOI: 10.1007/s00244-004-0172-3																						
	Publisher: USGS																						
	Year Published:2005																						
Data format (Excel, Access, Word, PDF, etc.): PDF																							
Criteria																							
<table border="1"> <thead> <tr> <th></th> <th>Yes</th> <th>No</th> <th>No but justification why still usable</th> </tr> </thead> <tbody> <tr> <td>Overall Conclusions</td> <td colspan="3"></td> </tr> <tr> <td></td> <td colspan="3"> <table border="1"> <tr> <td></td> <td>RI</td> <td>HHRA</td> <td>Both</td> </tr> <tr> <td>Conclusion - Data are usable for what purpose? (circle one):</td> <td></td> <td></td> <td>X</td> </tr> </table> </td> </tr> </tbody> </table>					Yes	No	No but justification why still usable	Overall Conclusions					<table border="1"> <tr> <td></td> <td>RI</td> <td>HHRA</td> <td>Both</td> </tr> <tr> <td>Conclusion - Data are usable for what purpose? (circle one):</td> <td></td> <td></td> <td>X</td> </tr> </table>				RI	HHRA	Both	Conclusion - Data are usable for what purpose? (circle one):			X
	Yes	No	No but justification why still usable																				
Overall Conclusions																							
	<table border="1"> <tr> <td></td> <td>RI</td> <td>HHRA</td> <td>Both</td> </tr> <tr> <td>Conclusion - Data are usable for what purpose? (circle one):</td> <td></td> <td></td> <td>X</td> </tr> </table>				RI	HHRA	Both	Conclusion - Data are usable for what purpose? (circle one):			X												
	RI	HHRA	Both																				
Conclusion - Data are usable for what purpose? (circle one):			X																				

Primary Reviewer & date: H. Mauer 4/5/16

background only

Secondary Reviewer & date of concurrence: J. Ynfante 5/11/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: Effects of Acid Mine Discharge on the Surface Water Resources in the Tar Creek Area Ottawa County, Oklahoma			
		Agency/Author: OWRB			
		Publication ID: CX810192-01-0			
		Publisher: OWRB			
		Year Published: 1983			
		Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)	
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?				
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA	
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?			NA
Are specific sampling locations identified?				NA	
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?				NA	
Are all data qualifiers clearly defined?				NA	
Was the data collected under an approved QAPP?				NA	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?		X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA	
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Effects of Acid Mine Discharge on the Surface Water Resources in the Tar Creek Area Ottawa County, Oklahoma		
	Agency/Author: OWRB		
	Publication ID: CX810192-01-0		
	Publisher: OWRB		
	Year Published: 1983		
	Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria			
	Yes	No	No but justification why still usable
Overall Conclusions	Background only. Old document not sure how relevant still.		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both
			X

Primary Reviewer & date: H. Mauer 4/7/16

background only

Secondary Reviewer & date of concurrence: K. Rhoades 6/27/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of Document: Chemical Analyses of Stream Sediment in the Tar Creek Basin of the Picher Mining Area, Northeast Oklahoma			
		Agency/Author: USGS; David L. Parkhurst, Michael Doughten and Paul P. Hearn			
		Publication ID: Open-File Report 88-469			
		Publisher: U.S. Department of the Interior; U.S. Geological Survey			
		Year Published: 1988			
		Data Format: PDF			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		Sediment	
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			Unknown	
	(For HHRA only) If the data is surface water, is it accessible to receptors?			N/A	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			N/A	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			N/A	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			N/A	
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
Are specific sampling locations identified?		X			
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X			
Are all data qualifiers clearly defined?		X			
Was the data collected under an approved QAPP?				Unknown	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?	X			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		X	Not specified	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		X		
	If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data										
	Title of Document: Chemical Analyses of Stream Sediment in the Tar Creek Basin of the Picher Mining Area, Northeast Oklahoma										
	Agency/Author: USGS; David L. Parkhurst, Michael Doughten and Paul P. Hearn										
	Publication ID: Open-File Report 88-469										
	Publisher: U.S. Department of the Interior; U.S. Geological Survey										
	Year Published: 1988										
Data Format: PDF											
<table border="1"> <tr> <th>Criteria</th> <th>Yes</th> <th>No</th> <th>No but justification why still usable</th> </tr> <tr> <td colspan="4"> </td> </tr> </table>				Criteria	Yes	No	No but justification why still usable				
Criteria	Yes	No	No but justification why still usable								
Overall Conclusions	Samples were collected over 30 years ago, but data could be used as background information. Data validation is not described in the document nor are QA/QC protocols included.										
	<table border="1"> <tr> <td>RI</td> <td>HHRA</td> <td>Both</td> </tr> <tr> <td>X</td> <td></td> <td></td> </tr> </table>			RI	HHRA	Both	X				
RI	HHRA	Both									
X											

Primary Reviewer & date: S. Scott 3/26/16

background info only

Secondary Reviewer & date of concurrence: J. Ynfante 5/11/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: An Environmental Health Evaluation of the Tar Creek Area		
		Agency/Author: Tar Creek Task Force		
		Publication ID: --		
		Publisher: Tar Creek Task Force		
		Year Published: 1983		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X	
	Are specific sampling locations identified?		X	
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X	
	Are all data qualifiers clearly defined?		X	
	Was the data collected under an approved QAPP?		X	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			NA
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		X	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		X	
	If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: An Environmental Health Evaluation of the Tar Creek Area		
	Agency/Author: Tar Creek Task Force		
	Publication ID: --		
	Publisher: Tar Creek Task Force		
	Year Published: 1983		
	Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria			
		Yes	No
		No but justification why still usable	
Overall Conclusions	Data older than 10 years and not validated		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both
			X

Primary Reviewer & date: H. Mauer 4/12/16

background only

Secondary Reviewer & date of concurrence: P.Lobos 7/13/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Native American Issues Final Report		
		Agency/Author: Native American Issues Subcommittee		
		Publication ID: --		
		Publisher: --		
		Year Published:--		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		X	
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		N/A	(If "No", no further use of data)
	Were the samples collected within the last 10 years?		N/A	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		N/A	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?		N/A	
	(For HHRA only) If the data is surface water, is it accessible to receptors?		N/A	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		N/A	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		N/A	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		N/A	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		N/A	
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?			N/A	
Are specific sampling locations identified?			N/A	
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			N/A	
Are all data qualifiers clearly defined?			N/A	
Was the data collected under an approved QAPP?			N/A	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		N/A	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		N/A	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		N/A	
	If the data were not validated, is there sufficient data present to perform data validation?		N/A	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: Native American Issues Final Report			
	Agency/Author: Native American Issues Subcommittee			
	Publication ID: --			
	Publisher: --			
	Year Published: --			
	Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria				
		Yes	No	No but justification why still usable
Overall Conclusions	This document notes issues and concerns in relation to Native Americans and provides a brief discussion of issues associated with Tar Creek. Site investigation data is not included in this report. No Quantitative data.			
	Conclusion - Data are usable for what purpose? (circle one):			
	RI	HHRA	Both	

Primary Reviewer & date: W. Lynch 3/23/16

Secondary Reviewer & date of concurrence: P. Lobos 7/13/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Soil ingestion rate determination in a rural population of Alberta, Canada practicing a wilderness lifestyle		
		Agency/Author: G. Irvine, J.R. Doyle, P.A.White, J.M. Blais		
		Publication ID: --		
		Publisher: Elsevier B.V.		
		Year Published: 2013		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?		N/A	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		N/A	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		N/A	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		N/A	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		N/A	
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?	?		
	Are all data qualifiers clearly defined?			N/A
	Was the data collected under an approved QAPP?		X	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		X	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		X	
	If the data were not validated, is there sufficient data present to perform data validation?		?	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data													
	Title of document: Soil ingestion rate determination in a rural population of Alberta, Canada practicing a wilderness lifestyle													
	Agency/Author: G. Irvine, J.R. Doyle, P.A.White, J.M. Blais													
	Publication ID: --													
	Publisher: Elsevier B.V.													
	Year Published: 2013													
	Data format (Excel, Access, Word, PDF, etc.): PDF													
<table border="1"> <tr> <th>Criteria</th> <th>Yes</th> <th>No</th> <th colspan="2">No but justification why still usable</th> </tr> <tr> <td colspan="5"> </td> </tr> </table>					Criteria	Yes	No	No but justification why still usable						
Criteria	Yes	No	No but justification why still usable											
Overall Conclusions	Study performed in Canada. Data collected outside of the six exposure areas.													
	Conclusion - Data are usable for what purpose? (circle one):			<table border="1"> <tr> <td>RI</td> <td>HHRA</td> <td>Both</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table>	RI	HHRA	Both							
	RI	HHRA	Both											

Primary Reviewer & date: W. Lynch 3/24/16

Secondary Reviewer & date of concurrence: P. Lobos 7/13/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document : A soil ingestion pilot study of a population following a traditional lifestyle typical of rural or wilderness areas			
		Agency/Author: Science of the Total Environment / J.R. Doyle, J.M. Blais, R.D. Holmes, P.A. White			
		Publication ID: Science of the Total Environment 424 (2012) 110–120			
		Publisher: Elsevier			
		Year Published: 2012			
		Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)	
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X			
	(For HHRA only) If the data is surface water, is it accessible to receptors?			N/A	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			N/A	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			N/A	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			N/A	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			N/A	
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
Are specific sampling locations identified?		X			
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X			
Are all data qualifiers clearly defined?				N/A	
Was the data collected under an approved QAPP?					
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?	X			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?				
	Is the data considered valid for use (i.e., the data were not rejected during validation)?				
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document : A soil ingestion pilot study of a population following a traditional lifestyle typical of rural or wilderness areas				
	Agency/Author: Science of the Total Environment / J.R. Doyle, J.M. Blais, R.D. Holmes, P.A. White				
	Publication ID: Science of the Total Environment 424 (2012) 110–120				
	Publisher: Elsevier				
	Year Published: 2012				
	Data format (Excel, Access, Word, PDF, etc.): PDF				
Criteria					
		Yes	No	No but justification why still usable	
Overall Conclusions	This study was performed in Canada. Data collected outside of the six exposure areas.				
	Conclusion - Data are usable for what purpose? (circle one):		RI	HHRA	Both

Primary Reviewer & date: W. Lynch 3/22/17

Secondary Reviewer & date of concurrence: P. Lobos 7/13/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Cherokee County Superfund Site		
		Operable Unit 4 - Treece Remediation of Tar Creek and Adjacent Mine Waste Areas - PowerPoint Presentation		
		Agency/Author: USEPA		
		Publication ID: --		
		Publisher: USEPA		
		Year Published: 2014		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			Unsure
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			Unsure
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		X	
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X		
Are specific sampling locations identified?			X	
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			X	
Are all data qualifiers clearly defined?			X	
Was the data collected under an approved QAPP?		X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: Cherokee County Superfund Site Operable Unit 4 - Treece Remediation of Tar Creek and Adjacent Mine Waste Areas - PowerPoint Presentation			
	Agency/Author: USEPA			
	Publication ID: --			
	Publisher: USEPA			
	Year Published: 2014			
	Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria				
		Yes	No	No but justification why still usable
Overall Conclusions				
	Conclusion - Data are usable for what purpose? (circle one):			
	RI	HHRA	Both	
	X			

Primary Reviewer & date: H. Mauer 4/4/16**Secondary Reviewer & date of concurrence:** J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Cherokee County Supplemental Sampling Data and Map		
		Agency/Author: USEPA Region 7		
		Publication ID: --		
		Publisher: USEPA		
		Year Published: 2015		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?	X		
	Are all data qualifiers clearly defined?		X	
	Was the data collected under an approved QAPP?	X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: Cherokee County Supplemental Sampling Data and Map				
	Agency/Author: USEPA Region 7				
	Publication ID: --				
	Publisher: USEPA				
	Year Published: 2015				
Data format (Excel, Access, Word, PDF, etc.): PDF					
Criteria		Yes	No	No but justification why still usable	
Overall Conclusions					
			RI	HHRA	Both
	Conclusion - Data are usable for what purpose? (circle one):				X

Primary Reviewer & date: H. Mauer 4/4/16**Secondary Reviewer & date of concurrence:** J. Ynfante 6/3/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Hydrogeologic Characterization Study Report Tar Creek Superfund Site, Operable Unit 4 Ottawa County, Oklahoma		
		Agency/Author: CH2M HILL		
		Publication ID: ES110910033819DFW\103130019		
		Publisher: CH2M HILL		
		Year Published: 2010		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			Unsure
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?	X		
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?	X		
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		X	
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?	X		
	Are all data qualifiers clearly defined?	X		
	Was the data collected under an approved QAPP?	X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Hydrogeologic Characterization Study Report Tar Creek Superfund Site, Operable Unit 4 Ottawa County, Oklahoma		
Agency/Author: CH2M HILL			
Publication ID: ES110910033819DFW\103130019			
Publisher: CH2M HILL			
Year Published: 2010			
Data format (Excel, Access, Word, PDF, etc.): PDF			

Criteria	Yes	No	No but justification why still usable								
Overall Conclusions	Report completed by CH2M. Shows surface water, groundwater, chat bases, fine ponds, and water level data. Could be used for RI and possibly for HHRA.										
	<table border="1"><thead><tr><th colspan="3">Conclusion - Data are usable for what purpose? (circle one):</th></tr><tr><th>RI</th><th>HHRA</th><th>Both</th></tr></thead><tbody><tr><td></td><td></td><td>X</td></tr></tbody></table>			Conclusion - Data are usable for what purpose? (circle one):			RI	HHRA	Both		
Conclusion - Data are usable for what purpose? (circle one):											
RI	HHRA	Both									
		X									

Primary Reviewer & date: H. Mauer 4/4/16

Secondary Reviewer & date of concurrence: J. Ynfante 5/11/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: The challenge posed to children's health by mixtures of toxic waste: the Tar Creek Superfund Site as a case-study		
		Agency/Author: Howard Hu, M.D., M.P.H., Sc.D., James Shine, Ph.D., and Robert O. Wright, M.D., M.P.H.		
		Publication ID: --		
		Publisher: National Institute of Health		
		Year Published: 2007		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			Unsure
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			Unsure
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
	Are specific sampling locations identified?		X	
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X	
	Are all data qualifiers clearly defined?		X	
	Was the data collected under an approved QAPP?			Unsure
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			Unsure
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			Unsure
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			Unsure
	If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: The challenge posed to children's health by mixtures of toxic waste: the Tar Creek Superfund Site as a case-study			
	Agency/Author: Howard Hu, M.D., M.P.H., Sc.D., James Shine, Ph.D., and Robert O. Wright, M.D., M.P.H.			
	Publication ID: --			
	Publisher: National Institute of Health			
	Year Published: 2007			
Data format (Excel, Access, Word, PDF, etc.): PDF				
Criteria				
Overall Conclusions	Study/report that draws from prior investigations with data more than 10 years old. No validated data given			
	Conclusion - Data are usable for what purpose? (circle one):			
		RI	HHRA	Both

Primary Reviewer & date: H. Mauer 4/4/16

Secondary Reviewer & date of concurrence: P. Lobos 7/13/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Zinc and Lead Poisoning in Wild Birds in the Tri-State Mining District (Oklahoma, Kansas, and Missouri)		
		Agency/Author: W. N. Beyer, J. Dalgarn, S. Dudding, J. B. French, R. Mateo, J. Miesner, L. Sileo, J. Spann		
		Publication ID: ES110910033819DFW\103130019		
		Publisher: DOI: 10.1007/s00244-004-0010-7		
		Year Published: 2004		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X		
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X	Method not provided
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?	X		
	Are all data qualifiers clearly defined?		X	
	Was the data collected under an approved QAPP?			Unsure
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			Unsure
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: Zinc and Lead Poisoning in Wild Birds in the Tri-State Mining District (Oklahoma, Kansas, and Missouri)			
	Agency/Author: W. N. Beyer, J. Dalgarn, S. Dudding, J. B. French, R. Mateo, J. Miesner, L. Sileo, J. Spann			
	Publication ID: ES110910033819DFW\103130019			
	Publisher: DOI: 10.1007/s00244-004-0010-7			
	Year Published: 2004			
	Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria				
		Yes	No	No but justification why still usable
Overall Conclusions				
	Conclusion - Data are usable for what purpose? (circle one):			
	RI	HHRA	Both	
				X

Primary Reviewer & date: H. Mauer 4/5/16

Secondary Reviewer & date of concurrence: J. Ynfante 5/11/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Grand Lake Watershed Plan		
		Agency/Author: Grand Lake O' the Cherokees Watershed Alliance Foundation, Inc.		
		Publication ID: --		
		Publisher: Grand Lake O' the Cherokees Watershed Alliance Foundation, Inc.		
		Year Published: 2008		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			NA
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?			NA
	Are specific sampling locations identified?			NA
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			NA
	Are all data qualifiers clearly defined?			NA
	Was the data collected under an approved QAPP?			NA
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			NA
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: Grand Lake Watershed Plan				
	Agency/Author: Grand Lake O' the Cherokees Watershed Alliance Foundation, Inc.				
	Publication ID: --				
	Publisher: Grand Lake O' the Cherokees Watershed Alliance Foundation, Inc.				
	Year Published: 2008				
	Data format (Excel, Access, Word, PDF, etc.): PDF				
Criteria					
		Yes	No	No but justification why still usable	
Overall Conclusions					
	Conclusion - Data are usable for what purpose? (circle one):		RI	HHRA	Both
			X		

Primary Reviewer & date: H. Mauer 4/7/16

background only

Secondary Reviewer & date of concurrence: K. Rhoades 6/27/2016 - See Appendix A for background information on Tar Creek and the OUs.

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Gravel bar core and sample locations, depth of water from the surface, and maximum sample depth at each location for Center Creek, Shoal Creek, Spring River, Tar Creek, and Turkey Creek in the Tri-State Mining District, 2011-2013. - Incomplete		
		Agency/Author: USGS		
		Publication ID: --		
		Publisher: --		
		Year Published: 2011-2013		
		Data format (Excel, Access, Word, PDF, etc.): Excel		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X		
Are specific sampling locations identified?		X		
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?				NA
Are all data qualifiers clearly defined?				NA
Was the data collected under an approved QAPP?				NA
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			NA
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: Gravel bar core and sample locations, depth of water from the surface, and maximum sample depth at each location for Center Creek, Shoal Creek, Spring River, Tar Creek, and Turkey Creek in the Tri-State Mining District, 2011-2013. - Incomplete				
	Agency/Author: USGS				
	Publication ID: --				
	Publisher: --				
	Year Published: 2011-2013				
	Data format (Excel, Access, Word, PDF, etc.): Excel				
Criteria			Yes	No	No but justification why still usable
Overall Conclusions					
	Conclusion - Data are usable for what purpose? (circle one):				
	RI	HHRA	Both		
	X				

Primary Reviewer & date: H. Mauer 4/7/16

Secondary Reviewer & date of concurrence: J. Ynfante 6/3/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: Ottawa Tribe of Oklahoma Surface Water Data			
		Agency/Author: STORET			
		Publication ID: --			
		Publisher: --			
		Year Published: 2016			
		Data format (Excel, Access, Word, PDF, etc.): Access			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)	
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X			
	(For HHRA only) If the data is surface water, is it accessible to receptors?	X			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?	X			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?	X			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X			
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
Are specific sampling locations identified?		X			
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X			
Are all data qualifiers clearly defined?		X			
Was the data collected under an approved QAPP?		X			
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?	X			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X			
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X			
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: Ottawa Tribe of Oklahoma Surface Water Data				
	Agency/Author: STORET				
	Publication ID: --				
	Publisher: --				
	Year Published: 2016				
	Data format (Excel, Access, Word, PDF, etc.): Access				
Criteria					
		Yes	No	No but justification why still usable	
Overall Conclusions					
	Conclusion - Data are usable for what purpose? (circle one):			RI	HHRA
					X

Primary Reviewer & date: K. Waltermire

Secondary Reviewer & date of concurrence: J. Ynfante 6/3/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: Seneca-Cayuga Tribe of Oklahoma CWA Section 106 Grants			
		Agency/Author: STORET			
		Publication ID: --			
		Publisher: --			
		Year Published: 2016			
		Data format (Excel, Access, Word, PDF, etc.): Access			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)	
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X			
	(For HHRA only) If the data is surface water, is it accessible to receptors?	X			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?	X			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?	X			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X			
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
Are specific sampling locations identified?		X			
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X			
Are all data qualifiers clearly defined?		X			
Was the data collected under an approved QAPP?		X			
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?	X			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X			
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X			
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: Seneca-Cayuga Tribe of Oklahoma CWA Section 106 Grants				
	Agency/Author: STORET				
	Publication ID: --				
	Publisher: --				
	Year Published: 2016				
	Data format (Excel, Access, Word, PDF, etc.): Access				
Criteria					
		Yes	No	No but justification why still usable	
Overall Conclusions					
	Conclusion - Data are usable for what purpose? (circle one):			RI	HHRA
					X

Primary Reviewer & date: K. Waltermire

Secondary Reviewer & date of concurrence: J. Ynfante 6/3/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: Eastern Shawnee Tribe of Oklahoma CWA Section 106 Grants			
		Agency/Author: STORET			
		Publication ID: --			
		Publisher: --			
		Year Published: 2016			
		Data format (Excel, Access, Word, PDF, etc.): Access			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)	
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X			
	(For HHRA only) If the data is surface water, is it accessible to receptors?	X			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?	X			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?	X			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X			
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
Are specific sampling locations identified?		X			
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X			
Are all data qualifiers clearly defined?		X			
Was the data collected under an approved QAPP?		X			
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?	X			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X			
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X			
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: Eastern Shawnee Tribe of Oklahoma CWA Section 106 Grants				
	Agency/Author: STORET				
	Publication ID: --				
	Publisher: --				
	Year Published: 2016				
	Data format (Excel, Access, Word, PDF, etc.): Access				
Criteria					
		Yes	No	No but justification why still usable	
Overall Conclusions					
	Conclusion - Data are usable for what purpose? (circle one):			RI	HHRA
					X

Primary Reviewer & date: K. Waltermire

Secondary Reviewer & date of concurrence: J. Ynfante 6/3/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: Miami Tribe of Oklahoma CWA Section 106 Grants			
		Agency/Author: STORET			
		Publication ID: --			
		Publisher: --			
		Year Published: 2016			
		Data format (Excel, Access, Word, PDF, etc.): Access			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)	
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X			
	(For HHRA only) If the data is surface water, is it accessible to receptors?	X			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?	X			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?	X			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X			
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
Are specific sampling locations identified?		X			
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X			
Are all data qualifiers clearly defined?		X			
Was the data collected under an approved QAPP?		X			
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?	X			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X			
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X			
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: Miami Tribe of Oklahoma CWA Section 106 Grants				
	Agency/Author: STORET				
	Publication ID: --				
	Publisher: --				
	Year Published: 2016				
	Data format (Excel, Access, Word, PDF, etc.): Access				
Criteria					
		Yes	No	No but justification why still usable	
Overall Conclusions					
	Conclusion - Data are usable for what purpose? (circle one):			RI	HHRA
					X

Primary Reviewer & date: K. Waltermire

Secondary Reviewer & date of concurrence: J. Ynfante 6/3/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: PUBLIC HEALTH ASSESSMENT FOR OCCURRENCE OF SELECTED HEALTH CONDITIONS IN OTTAWA COUNTY, OKLAHOMA. Report & Fact Sheet			
		Agency/Author: Oklahoma State Department of Health, The Agency for Toxic Substances and Disease Registry U.S. Department of Health and Human Services			
		Publication ID: --			
		Publisher: --			
		Year Published: September 2008			
		Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		N/A		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		N/A	(If "No", no further use of data)	
	Were the samples collected within the last 10 years?		N/A	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?		N/A		
	(For HHRA only) If the data is surface water, is it accessible to receptors?		N/A		
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		N/A		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		N/A		
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		N/A		
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		N/A		
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?		N/A	
Are specific sampling locations identified?			N/A		
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			N/A		
Are all data qualifiers clearly defined?			N/A		
Was the data collected under an approved QAPP?					
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?		N/A		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		N/A		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		N/A		
	If the data were not validated, is there sufficient data present to perform data validation?		N/A	(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: PUBLIC HEALTH ASSESSMENT FOR OCCURRENCE OF SELECTED HEALTH CONDITIONS IN OTTAWA COUNTY, OKLAHOMA. Report & Fact Sheet			
	Agency/Author: Oklahoma State Department of Health, The Agency for Toxic Substances and Disease Registry U.S. Department of Health and Human Services			
	Publication ID: --			
	Publisher: --			
	Year Published: September 2008			
	Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria		Yes	No	No but justification why still usable
Overall Conclusions	This document provides information and research on health conditions potentially associated with Tar Creek. ATSDR Health condition report. No quantitative data for HHRA assessment.			
	Conclusion - Data are usable for what purpose? (circle one):			
	RI	HHRA	Both	

Primary Reviewer & date: W. Lynch 3/24/16

Secondary Reviewer & date of concurrence: P. Lobos 7/13/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: Oklahoma Water Resources Board Water Quality Database for Neosho and Spring River Surface Water Data 1998-2015			
		Agency/Author: Kimberly A. Hays, Karen McBee			
		Publication ID: --			
		Publisher: OWRB			
		Year Published: 2016			
		Data format (Excel, Access, Word, PDF, etc.): Excel			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)	
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X			
	(For HHRA only) If the data is surface water, is it accessible to receptors?	X			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA	
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X	
Are specific sampling locations identified?		X			
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?				NA	
Are all data qualifiers clearly defined?				NA	
Was the data collected under an approved QAPP?				NA	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?			NA	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA	
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Okalahoma Water Resources Board Water Quality Database for Neosho and Spring River Surface Water Data 1998-2015		
	Agency/Author: Kimberly A. Hays, Karen McBee		
	Publication ID: --		
	Publisher: OWRB		
	Year Published: 2016		
	Data format (Excel, Access, Word, PDF, etc.): Excel		
Criteria			
	Yes	No	No but justification why still usable
Overall Conclusions			
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both
	X		

Primary Reviewer & date: H. Mauer 5/10/16

Secondary Reviewer & date of concurrence: J. Ynfante 6/3/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: Comparability of Suspended-Sediment Concentration and Total Suspended Solids Data			
		Agency/Author: John R. Gray, G. Douglas Glysson, Lisa M. Turcios, and Gregory E. Schwarz			
		Publication ID: Water-Resources Investigations Report 00-4191			
		Publisher: U.S. Department of the Interior U.S. Geological Survey			
		Year Published: August 2000			
		Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)	
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X			
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA	
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?			NA
Are specific sampling locations identified?				NA	
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?				NA	
Are all data qualifiers clearly defined?				NA	
Was the data collected under an approved QAPP?				NA	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?			NA	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA	
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Comparability of Suspended-Sediment Concentration and Total Suspended Solids Data		
Agency/Author: John R. Gray, G. Douglas Glysson, Lisa M. Turcios, and Gregory E. Schwarz			
Publication ID: Water-Resources Investigations Report 00-4191			
Publisher: U.S. Department of the Interior U.S. Geological Survey			
Year Published: August 2000			
Data format (Excel, Access, Word, PDF, etc.): PDF			

Criteria	Yes	No	No but justification why still usable	
Overall Conclusions				
Conclusion - Data are usable for what purpose? (circle one):		RI	HHRA	Both
		X		

Initial Review and date: H. Mauer 5/10/16

background only

Secondary Reviewer & date of concurrence: K. Rhoades 6/27/2016

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: National Field Manual for the Collection of Water-Quality Data		
		Agency/Author: Franceska D. Wilde, Mark W. Sandstrom, and Stanley C. Skrobialowski		
		Publication ID: --		
		Publisher: U.S. Department of the Interior, U.S. Geological Survey		
		Year Published: 2014		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?			NA
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).			(If "No", no further use of data)
	Were the samples collected within the last 10 years?			(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).			(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			NA
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?			NA
	Are specific sampling locations identified?			NA
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			NA
	Are all data qualifiers clearly defined?			NA
	Was the data collected under an approved QAPP?			NA
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			NA
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			NA
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			NA
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data										
	Title of document: National Field Manual for the Collection of Water-Quality Data										
	Agency/Author: Francesca D. Wilde, Mark W. Sandstrom, and Stanley C. Skrobialowski										
	Publication ID: --										
	Publisher: U.S. Department of the Interior, U.S. Geological Survey										
	Year Published: 2014										
Data format (Excel, Access, Word, PDF, etc.): PDF											
<table border="1"> <tr> <th>Criteria</th> <th>Yes</th> <th>No</th> <th>No but justification why still usable</th> </tr> <tr> <td colspan="4"> </td> </tr> </table>				Criteria	Yes	No	No but justification why still usable				
Criteria	Yes	No	No but justification why still usable								
Overall Conclusions											
	<table border="1"> <tr> <td></td> <td>RI</td> <td>HHRA</td> <td>Both</td> </tr> <tr> <td>Conclusion - Data are usable for what purpose? (circle one):</td> <td></td> <td></td> <td>X</td> </tr> </table>				RI	HHRA	Both	Conclusion - Data are usable for what purpose? (circle one):			X
	RI	HHRA	Both								
Conclusion - Data are usable for what purpose? (circle one):			X								

Primary Reviewer & date: H. Mauer 5/10/16

background only

Secondary Reviewer & date of concurrence: K. Rhoades 6/27/2016

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: Fifth Five-Year Review Report For The Tar Creek Superfund Site, Ottawa, County, Oklahoma			
		Agency/Author: USEPA			
		Publication ID: --			
		Publisher: USEPA			
		Year Published: September 2015			
		Data format (Excel, Access, Word, PDF, etc.): PDF			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)	
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X			
	(For HHRA only) If the data is surface water, is it accessible to receptors?	X			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA	
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
Are specific sampling locations identified?		X			
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X			
Are all data qualifiers clearly defined?		X			
Was the data collected under an approved QAPP?		X			
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?	X		NA	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X			
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X			
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Fifth Five-Year Review Report For The Tar Creek Superfund Site, Ottawa, County, Oklahoma		
Agency/Author: USEPA			
Publication ID: --			
Publisher: USEPA			
Year Published: September 2015			
Data format (Excel, Access, Word, PDF, etc.): PDF			

Criteria	Yes	No	No but justification why still usable

Overall Conclusions	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both
			X

Primary Reviewer & date: H. Mauer 5/10/16**Secondary Reviewer & date of concurrence:** J. Ynfante 7/7/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Assessment of Contaminated Streambed Sediment in the Kansas Part of the Historic Tri-State Lead and Zinc Mining District Cherokee County, 2004		
		Agency/Author: Larry M Pope		
		Publication ID: Scientific Investigations Report 2005-5251		
		Publisher: U.S. Department of the Interior U.S. Geological Survey		
		Year Published: 2005		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X		
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?			NA
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?			NA
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X		
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
	Are specific sampling locations identified?	X		
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?	X		
	Are all data qualifiers clearly defined?	X		
	Was the data collected under an approved QAPP?			Unknown
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?		X	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Assessment of Contaminated Streambed Sediment in the Kansas Part of the Historic Tri-State Lead and Zinc Mining District Cherokee County, 2004		
	Agency/Author: Larry M Pope		
	Publication ID: Scientific Investigations Report 2005-5251		
	Publisher: U.S. Department of the Interior U.S. Geological Survey		
	Year Published: 2005		
	Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria			
	Yes	No	No but justification why still usable
Overall Conclusions			
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both
			X

Primary Reviewer & date: H. Mauer 5/10/16

background only

Secondary Reviewer & date of concurrence: J. Ynfante 5/11/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Final: Partial Resotration Plan and Environmental Assessment: Addressing Injuries to Migratory Birds and Threatened and Endangered Species at the Tar Creek Superfund Site, Ottawa County, Oklahoma		
		Agency/Author: Tulsa, Oklahoma Ecological Services Field Office - Fish and Wildlife Services - US Department of the Interior		
		Publication ID: --		
		Publisher: US Department of the Interior		
		Year Published: 6/2000		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		X	
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl].		X	(If "No", no further use of data)
	Were the samples collected within the last 10 years?			(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		X	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?			
	(For HHRA only) If the data is surface water, is it accessible to receptors?		X	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		X	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		X	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?			X
	Are specific sampling locations identified?			X
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			X
	Are all data qualifiers clearly defined?			X
	Was the data collected under an approved QAPP?			X
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?			X
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?			X
	Is the data considered valid for use (i.e., the data were not rejected during validation)?			X
	If the data were not validated, is there sufficient data present to perform data validation?			(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data		
	Title of document: Final: Partial Resotration Plan and Environmental Assessment: Addressing Injuries to Migratory Birds and Threatened and Endangered Species at the Tar Creek Superfund Site, Ottawa County, Oklahoma		
	Agency/Author: Tulsa, Oklahoma Ecological Services Field Office - Fish and Wildlife Services - US Department of the Interior		
	Publication ID: --		
	Publisher: US Department of the Interior		
	Year Published: 6/2000		
	Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria	Yes	No	No but justification why still usable
Overall Conclusions	Ecological restoration plan. No valid/usable data. Useful for background only.		
	Conclusion - Data are usable for what purpose? (circle one):		
	RI	HHRA	Both
	X		

Primary Reviewer & date: W. Kite 6/7/16

Secondary Reviewer & date of concurrence: P.Lobos 7/13/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: Miami Water Quality Monitoring Program Data			
		Agency/Author: STORET			
		Publication ID: --			
		Publisher: --			
		Year Published: 2016			
		Data format (Excel, Access, Word, PDF, etc.): Access			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)	
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X			
	(For HHRA only) If the data is surface water, is it accessible to receptors?	X			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?	X			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?	X			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X			
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
Are specific sampling locations identified?		X			
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X			
Are all data qualifiers clearly defined?		X			
Was the data collected under an approved QAPP?		X			
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?	X			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X			
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X			
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: Miami Water Quality Monitoring Program Data				
	Agency/Author: STORET				
	Publication ID: --				
	Publisher: --				
	Year Published: 2016				
	Data format (Excel, Access, Word, PDF, etc.): Access				
Criteria					
		Yes	No	No but justification why still usable	
Overall Conclusions					
	Conclusion - Data are usable for what purpose? (circle one):			RI	HHRA
					X

Primary Reviewer & date: K. Waltermire

Secondary Reviewer & date of concurrence: J. Ynfante 6/3/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data			
		Title of document: OU Surface Water Results			
		Agency/Author: Dr. Robert Nairn			
		Publication ID: --			
		Publisher: --			
		Year Published: 2016			
		Data format (Excel, Access, Word, PDF, etc.): Access			
Criteria		Yes	No	No but justification why still usable	
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.				
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X			
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.				
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)	
	Were the samples collected within the last 10 years?	X		(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)	
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)	
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X			
	(For HHRA only) If the data is surface water, is it accessible to receptors?	X			
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?	X			
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?	X			
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?	X			
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?	X			
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
		Are sample matrix, date of sample collection, analytical method, and units stated for all results?	X		
Are specific sampling locations identified?		X			
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X			
Are all data qualifiers clearly defined?		X			
Was the data collected under an approved QAPP?		X			
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.				
	Are the detection limits sufficiently low to meet screening levels?	X			
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.				
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X			
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X			
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)	

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: OU Surface Water Results				
	Agency/Author: Dr. Robert Nairn				
	Publication ID: --				
	Publisher: --				
	Year Published: 2016				
	Data format (Excel, Access, Word, PDF, etc.): Access				
Criteria					
		Yes	No	No but justification why still usable	
Overall Conclusions					
	Conclusion - Data are usable for what purpose? (circle one):			RI	HHRA
					X

Primary Reviewer & date: K. Waltermire

Secondary Reviewer & date of concurrence: J. Ynfante 6/3/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Ecological Regions of North America: Poster		
		Agency/Author: U.S. EPA		
		Publication ID: --		
		Publisher: --		
		Year Published: 2006		
		Data format (Excel, Access, Word, PDF, etc.): Access		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		NA	
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		NA	(If "No", no further use of data)
	Were the samples collected within the last 10 years?		NA	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		NA	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?		NA	
	(For HHRA only) If the data is surface water, is it accessible to receptors?		NA	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		NA	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		NA	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		NA	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		NA	
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?			NA	
Are specific sampling locations identified?			NA	
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?			NA	
Are all data qualifiers clearly defined?			NA	
Was the data collected under an approved QAPP?			NA	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		NA	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		NA	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		NA	
	If the data were not validated, is there sufficient data present to perform data validation?		NA	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: Ecological Regions of North America: Poster				
	Agency/Author: U.S. EPA				
	Publication ID: --				
	Publisher: --				
	Year Published: 2006				
	Data format (Excel, Access, Word, PDF, etc.): Access				
Criteria			Yes	No	No but justification why still usable
Overall Conclusions	Ecological Regions are not a part of the data collection, but can provide background information for the remedial investigation.				
	Conclusion - Data are usable for what purpose? (circle one):				
	RI	HHRA	Both		
	X				

Primary Reviewer & date: K. Waltermire

Secondary Reviewer & date of concurrence: J. Ynfante 6/3/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Ecoregions of Oklahoma: Poster		
		Agency/Author: Wood, Omerik, Butler, Ford, Henley, Hoagland, Arndt, and Moran		
		Publication ID: --		
		Publisher: --		
		Year Published: 2005		
		Data format (Excel, Access, Word, PDF, etc.): Access		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		NA	
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		NA	(If "No", no further use of data)
	Were the samples collected within the last 10 years?		NA	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		NA	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?		NA	
	(For HHRA only) If the data is surface water, is it accessible to receptors?		NA	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		NA	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		NA	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		NA	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		NA	
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		NA	
	Are specific sampling locations identified?		NA	
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		NA	
	Are all data qualifiers clearly defined?		NA	
	Was the data collected under an approved QAPP?		NA	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		NA	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		NA	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		NA	
	If the data were not validated, is there sufficient data present to perform data validation?		NA	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: Ecoregions of Oklahoma: Poster				
	Agency/Author: Wood, Omerik, Butler, Ford, Henley, Hoagland, Arndt, and Moran				
	Publication ID: --				
	Publisher: --				
	Year Published: 2005				
	Data format (Excel, Access, Word, PDF, etc.): Access				
Criteria					
		Yes	No	No but justification why still usable	
Overall Conclusions	Ecological Regions are not a part of the data collection, but can provide background information for the remedial investigation.				
	Conclusion - Data are usable for what purpose? (circle one):			RI X	HHRA

Primary Reviewer & date: K. Waltermire

Secondary Reviewer & date of concurrence: J. Ynfante 6/3/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: The Climate of Ottawa County		
		Agency/Author: Oklahoma Climatological Survey		
		Publication ID: --		
		Publisher: --		
		Year Published: --		
		Data format (Excel, Access, Word, PDF, etc.): Access		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?		NA	
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).		NA	(If "No", no further use of data)
	Were the samples collected within the last 10 years?		NA	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).		NA	(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?		NA	
	(For HHRA only) If the data is surface water, is it accessible to receptors?		NA	
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?		NA	
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?		NA	
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?		NA	
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?		NA	
AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.			
	Are sample matrix, date of sample collection, analytical method, and units stated for all results?		NA	
	Are specific sampling locations identified?		NA	
	Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		NA	
	Are all data qualifiers clearly defined?		NA	
	Was the data collected under an approved QAPP?		NA	
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?		NA	
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?		NA	
	Is the data considered valid for use (i.e., the data were not rejected during validation)?		NA	
	If the data were not validated, is there sufficient data present to perform data validation?		NA	(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data			
	Title of document: The Climate of Ottawa County			
	Agency/Author: Oklahoma Climatological Survey			
	Publication ID: --			
	Publisher: --			
	Year Published: --			
	Data format (Excel, Access, Word, PDF, etc.): Access			
Criteria				
		Yes	No	No but justification why still usable
Overall Conclusions				
	Climate is not a part of the data collection, but can provide background information for the remedial investigation.			
	Conclusion - Data are usable for what purpose? (circle one):		RI	HHRA
		X		

Primary Reviewer & date: K. Waltermire

Secondary Reviewer & date of concurrence: J. Ynfante 6/3/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General		General Information about the document or data		
		Title of document: Characterization of Chat Leachate and Mine Discharge into Tar Creek, Ottawa County, Oklahoma		
		Agency/Author: USGS, Cope and Becker		
		Publication ID: --		
		Publisher: USGS		
		Year Published: 2005		
		Data format (Excel, Access, Word, PDF, etc.): PDF		
Criteria		Yes	No	No but justification why still usable
Assessment Factor (AF) 1 - Soundness	The extent to which the scientific and technical procedures, measures, methods or models employed to generate the information are reasonable for, and consistent with, the intended application.			
	Were analytical methods used consistent with those typically used to support an RI or HHRA?	X		
AF 2 - Applicability & Utility	The extent to which the information is relevant for the Agency's intended use.			
	Is the matrix of the sample applicable to the RI or HHRA? (Sediment, Surface Water, Mine Discharge, Source Material Seep, or Biota [fish, shellfish, aquatic plants, aquatic mammals, waterfowl]).	X		(If "No", no further use of data)
	Were the samples collected within the last 10 years?		X	(If "No", data not used quantitatively for N&E or HHRA but may be used as background information)
	Was the data collected from within the six exposure focus areas identified by the USEPA and stakeholders? (Neosho River from Fourmile Creek downstream to Grand Lake, Elm Creek, Tar Creek inclusive of Lytle Creek, Spring River downstream of Empire Lake to Grand Lake, Beaver Creek, or Lost Creek).	X		(If "No", no further use of data)
	Is the data representative of current site conditions (i.e., no sediment dredging, construction activities, deposition, or significant erosion or flooding has occurred in the sampled area after the samples were collected)?	X		
	(For HHRA only) If the data is surface water, is it accessible to receptors?			NA
	(For HHRA only) If the data is sediment, was it collected from depths associated with an exposure scenario identified in the CSM?			NA
	(For HHRA only) If the data is mine discharge, is it accessible to receptors?	X		
	If the data is mine discharge, can it potentially flow overland and reach or impact surface water or sediment quality?	X		
	If biota data, was it collected from fish, shellfish, aquatic plants, aquatic mammals, or waterfowl that are ingested or used by humans? What biota part was sampled (e.g., leaves, organs, muscle tissue)?			NA
	AF 3 - Clarity & Completeness	The degree of clarity and completeness with which the data, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented.		
Are sample matrix, date of sample collection, analytical method, and units stated for all results?		X		
Are specific sampling locations identified?		X		
Are non-detect results reported as less than a specific detection limit (i.e., not simply "ND" or 0)?		X		NA
Are all data qualifiers clearly defined?			X	
Was the data collected under an approved QAPP?		X		
AF 4 - Uncertainty and Variability	The extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized.			
	Are the detection limits sufficiently low to meet screening levels?	X		NA
AF 5 - Evaluation and Review	The extent of independent verification, validation and peer review of the information or of the procedures, measures, methods or models.			
	Were the data properly and independently validated in accordance with National Functional Guidelines or similarly acceptable protocol?	X		
	Is the data considered valid for use (i.e., the data were not rejected during validation)?	X		
	If the data were not validated, is there sufficient data present to perform data validation?	X		(If "No", then no further use of data)

Checklist for Assessment of Existing Information

Operable Unit 5

Tar Creek Superfund Site, Ottawa County, Oklahoma

General	General Information about the document or data				
	Title of document: Characterization of Chat Leachate and Mine Discharge into Tar Creek, Ottawa County, Oklahoma				
Agency/Author: USGS, Cope and Becker					
Publication ID: --					
Publisher: USGS					
Year Published: 2005					
Data format (Excel, Access, Word, PDF, etc.): PDF					
Criteria		Yes	No	No but justification why still usable	
Overall Conclusions	Although qualifiers are not defined, USGS follows appropriate quality protocol.				
	Conclusion - Data are usable for what purpose? (circle one):		RI	HHRA	Both
			X		

Primary Reviewer & date: H. Mauer 7/5/16

Secondary Reviewer & date of concurrence: P. Lobos 7/12/16

Notes:

CSM - Conceptual Site Model

HHRA - Human Health Risk Assessment

N&E - Nature and Extent

QAPP - Quality Assurance Project Plan

RI - Remedial Investigation